ENGINEERING NEWS-RECORD

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- Take-off point for outer space p.28

General Welling on the missile base program p.21

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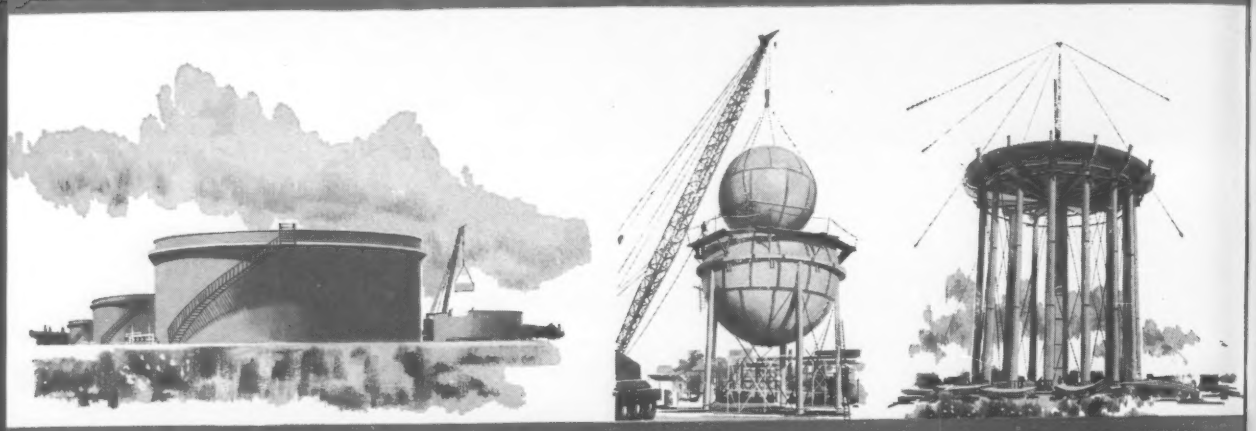

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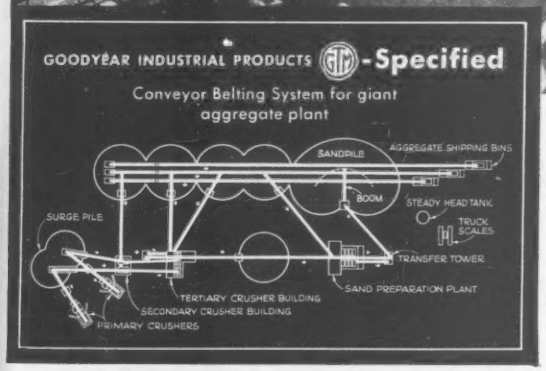
Belting a giant aggregate plant to turn out 2,200 tons an hour is a big order. But contractors need that eye-opening output for the construction of the waterways, power stations and reservoir of the $720-million Niagara Power Project. The G.T.M.—Goodyear Technical Man—was called on to study the belting needs of 51 separate conveyors. His recommendations were based on G.T.M. experience specifying for stand-out conveyor belt performance in plants, mines and construction operations the country over. Result: Over four miles of the G.T.M.'s belting now conveys everything conveyable at this plant. And before the project is completed, it is expected that over 10 million tons of aggregate will move over these belts.



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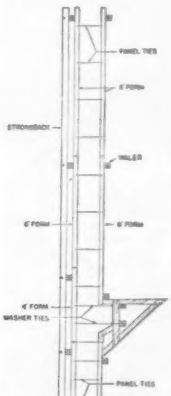
Extensive Use of Symons Steel-Ply

...Speeds Work on "Rush" Job

New, non-military, air route traffic control center building near Fremont, California will help control and direct aircraft, prevent collisions, and guide "lost" planes over a wide western area. J. H. Pomeroy & Co., Inc. San Francisco was the contractor.



The project was unusual because of the speed with which it had to be erected. The building is perhaps the first non-military structure in the west that has been designed to withstand atomic "fallout." The contractor gave careful study to the most time-saving methods. Symons Steel-Plys proved to be one of the principal time-savers. They were used on all major construction and were also adapted for pouring of large, reinforced concrete beams that were set between steel columns for blast protection.

Complete "Air Route Traffic Control Center" story sent *free* upon request. Symons Steel-Plys can be rented with purchase option.

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"TIMKEN® CARBIDE INSERT BITS AVERAGED 50% MORE FOOTAGE THAN EXPECTED"

Special report from Montag-Halvorson-McLaughlin & Associates

•

Location: John Day dam project on the Columbia River, 32 mi. from The Dalles, Ore.

•

Operating Conditions Lava-Basalt and Flo-Breccia

Accurate footage records show that Montag-Halvorson-McLaughlin & Associates of Portland, Ore., drilled over 3,000 feet per bit in abrasive Lava-Basalt and Flo-Breccia. Timken® bit quality, plus regular bit reconditioning and proper maintenance of drilling equipment paid off in 50% more feet per bit over original estimates.

Which Timken Bit Should You Use?

Your most economical bit in hard, abrasive ground is the Timken carbide insert bit. In softer ground, use the low-cost Timken all-steel multi-use bit. They're interchangeable in the same thread series; you can switch bits as the ground changes. Dozens of Timken bits fit the same drill steel. Bit bodies are made of Timken electric furnace fine alloy steel, have special shoulder unions to protect against drilling impact. Let us help you select the right Timken bit for your job. The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable: "TIMROSCO". Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits.

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removable rock bits

Now, a modern New Jersey plant to serve all your clay pipe needs

Proved-in-service plastic AMVIT JOINT
the factory-made mechanical joint
for quick, easy, low-cost installation

In the past few years over 100,000 miles of Amvit Jointed Clay Pipe have been installed across the country with outstanding results.

Amvit joint is a true mechanical joint made from plasticized resins of polyvinyl chloride. It is a compression joint on the ball and socket principle. When the joint is made, the surfaces of both bell and spigot rings are in constant high compression, thus preventing infiltration, exfiltration and root penetration.

Better Flow — the design of the Amvit joint assures self-centering and this feature, combined with the new Glas-Glaz, gives a smoother invert and better flow characteristics, permitting the use of a low Kutters "n" value in design.

New Glas-Glaz
the glass lined pipe

Here's a new product that has everything. Vitrified clay pipe in five foot lengths, the rootproof Amvit joint, glass lined, inside and out.

It's stronger — Amvit Glas-Glaz pipe, produced by the most modern methods, has crushing strength characteristics far exceeding A.S.T.M. specifications. Formed under rigid controls, Glas-Glaz pipe is more uniform, has better body. It is fired in a new million-dollar tunnel kiln that fuses the glaze to the body of the pipe at extremely high temperatures, so that the lining becomes an integral part of the pipe.

GLAS-GLAZ PIPE — Here's a new product that has everything. Vitrified clay pipe in long five-foot lengths, the rootproof Amvit Joint, glass lined inside and out.

FOOLPROOF JOINT — Amvit Joint is a true mechanical joint made from plasticized resins of polyvinyl chloride. It is a compression type joint on the ball and socket principle.

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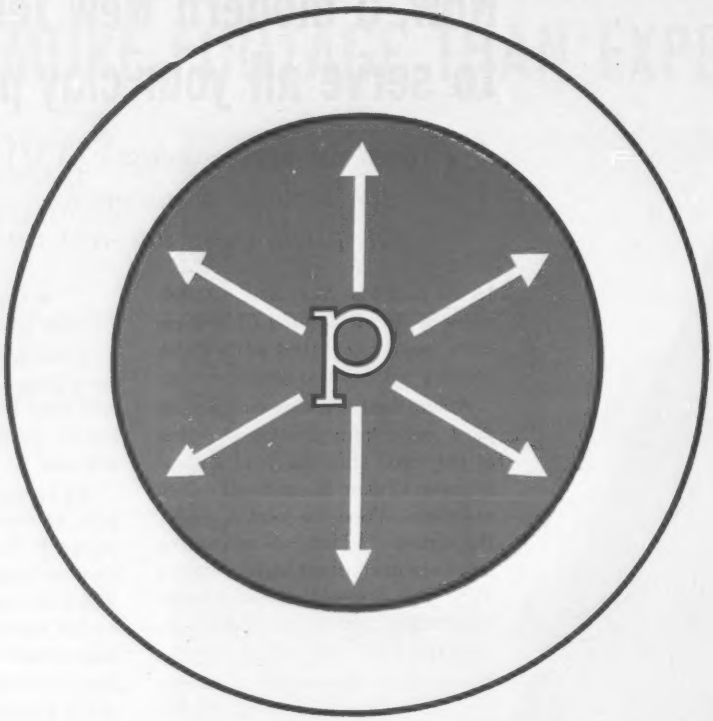

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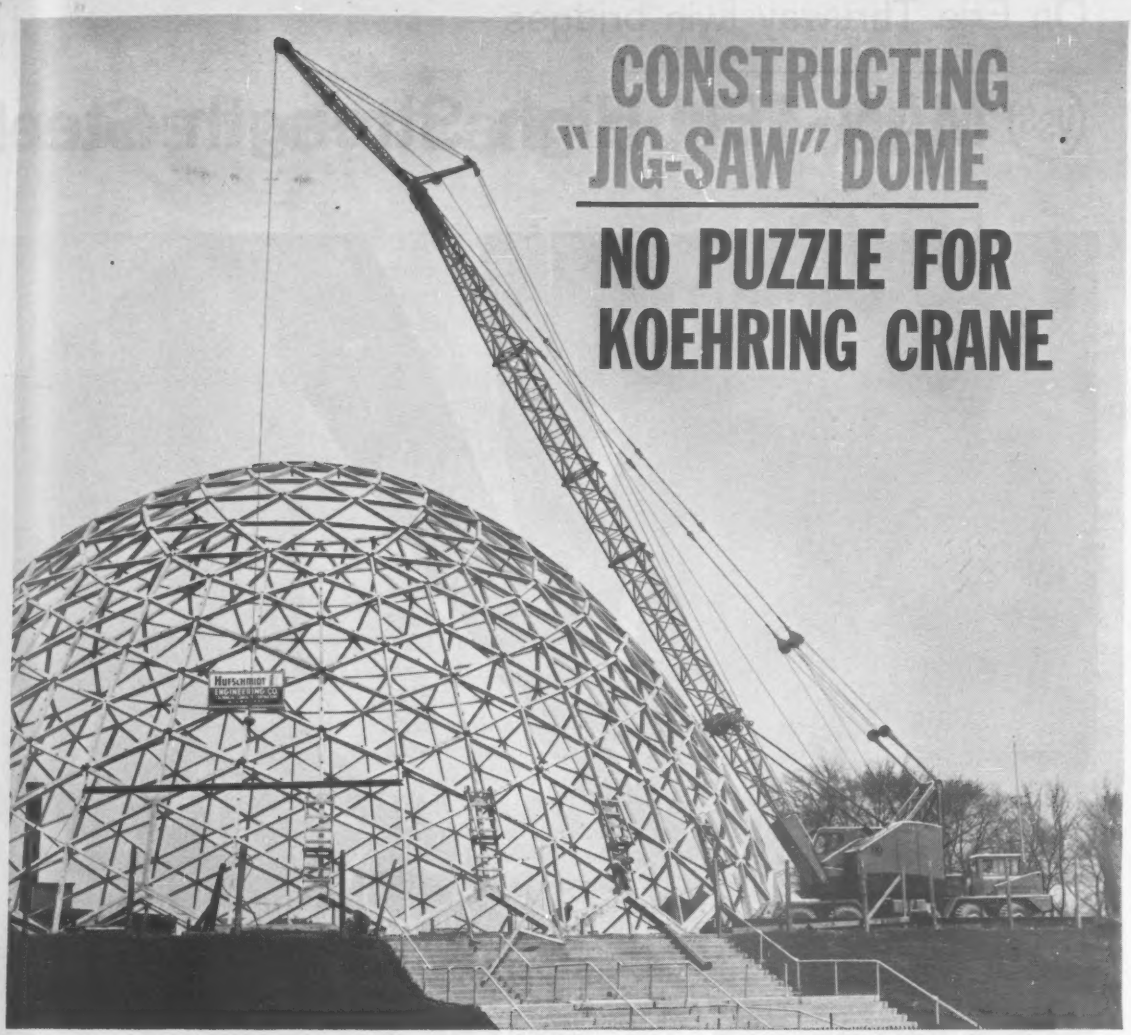
HELPING INDUSTRY CHOOSE STEELS THAT FIT THE JOB



Koehring truck crane with 85-ft. boom and 25-ft. jib handles all erecting of precast forms for unique dome.

A group of unique new landmarks is rising in Milwaukee's Mitchell Park: giant domes of concrete and glass for a modern botanical garden. Milwaukee's Hufschmidt Engineering Company has the task of casting and erecting the concrete hexagons, diamonds and triangles that form the framework for two of these eye-catching structures.

Fast accurate placing of these precast forms — some of which weigh more than 5000 pounds — calls for a crane with real *precision* control and smooth easy mobility. That's why Hufschmidt uses a Koehring 445 . . . a crane that easily meets all the requirements, speeds completion of the job.

Ask *your* Koehring distributor for all the facts about Koehring truck cranes . . . they can make money for you, too!

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More Work Capacity...
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On Erie Thruway twin bridges—

USS MAN-TEN High Strength Steel

USS MAN-TEN Brand High Strength Steel was used for the highly stressed members of these two bridges, including many of the upper and lower chords, diagonals, verticals and gusset plates. Bridge owner: Pennsylvania Department of Highways. Designer: Richardson, Gordon & Associates, Pittsburgh. General Contractor: Brayman Construction Co., Pittsburgh. Erector and Fabricator: The Levinson Steel Co., Pittsburgh.

eel saves weight and cuts costs

The use of high strength steel as a means of saving weight and reducing costs in bridges is rapidly gaining favor. These twin bridges across Six Mile Creek on the Erie Thruway, 15 miles east of Erie, Pennsylvania, were built with 600 tons of USS MAN-TEN Brand High Strength Steel to ASTM specification A-440 and 1,200 tons of ASTM A-7 Steel.

High strength steel was used for heavily stressed members where its higher allowable stress value and weight savings made it more economical. The design stress in bridges for USS MAN-TEN Steel is usually 24,000 psi compared to 18,000 psi for ASTM A-7 Steel. The members shown in color in the diagram were made of USS MAN-TEN High Strength Steel. In addition, many of the gusset plates were MAN-TEN Steel.

Weight savings: USS MAN-TEN (A-440) Steel fully meets all the requirements of the new ASTM specification A-440. When full advantage of its higher yield point—50% greater than structural carbon steel—is utilized, it allows the engineer to design with smaller sections than would be normally used—and thereby realize weight savings up to 25%. A cost savings is also possible, since anywhere USS MAN-TEN Steel accomplishes a weight reduction over 16%, it then becomes the more economical steel to use.

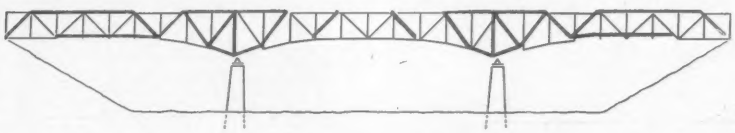
Other USS High Strength Steels available for construction include USS TRI-TEN and USS COR-TEN Steels. Like USS MAN-TEN Steel, these grades have a minimum yield point of 50,000 psi and offer the same weight and a potential cost savings. USS TRI-TEN Steel particularly is recommended for welded structures, while USS COR-TEN Steel, because of its outstanding resistance to atmospheric corrosion and superior paint adherence qualities, is a "natural" for bolted or riveted structures where maintenance is a problem.

Where an extra high yield strength steel is needed, USS "T-1" Constructional Alloy Steel combines weldability and toughness with 100,000 psi minimum yield strength.

For complete information on any of these steels, write United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS Steels for Bridge Design

Structural Carbon Steel 33,000 psi minimum yield point	**USS MAN-TEN High Strength Steel** 50,000 psi minimum yield point
USS TRI-TEN High Strength Steel 50,000 psi minimum yield point	**USS "T-1" Constructional Alloy Steel** 100,000 psi minimum yield strength



Where high strength steel saved money. Profile of one of the two bridges showing members made of USS MAN-TEN Steel where its high strength/weight ratio made it economical to use.

USS, MAN-TEN, COR-TEN, TRI-TEN and "T-1" are registered trademarks

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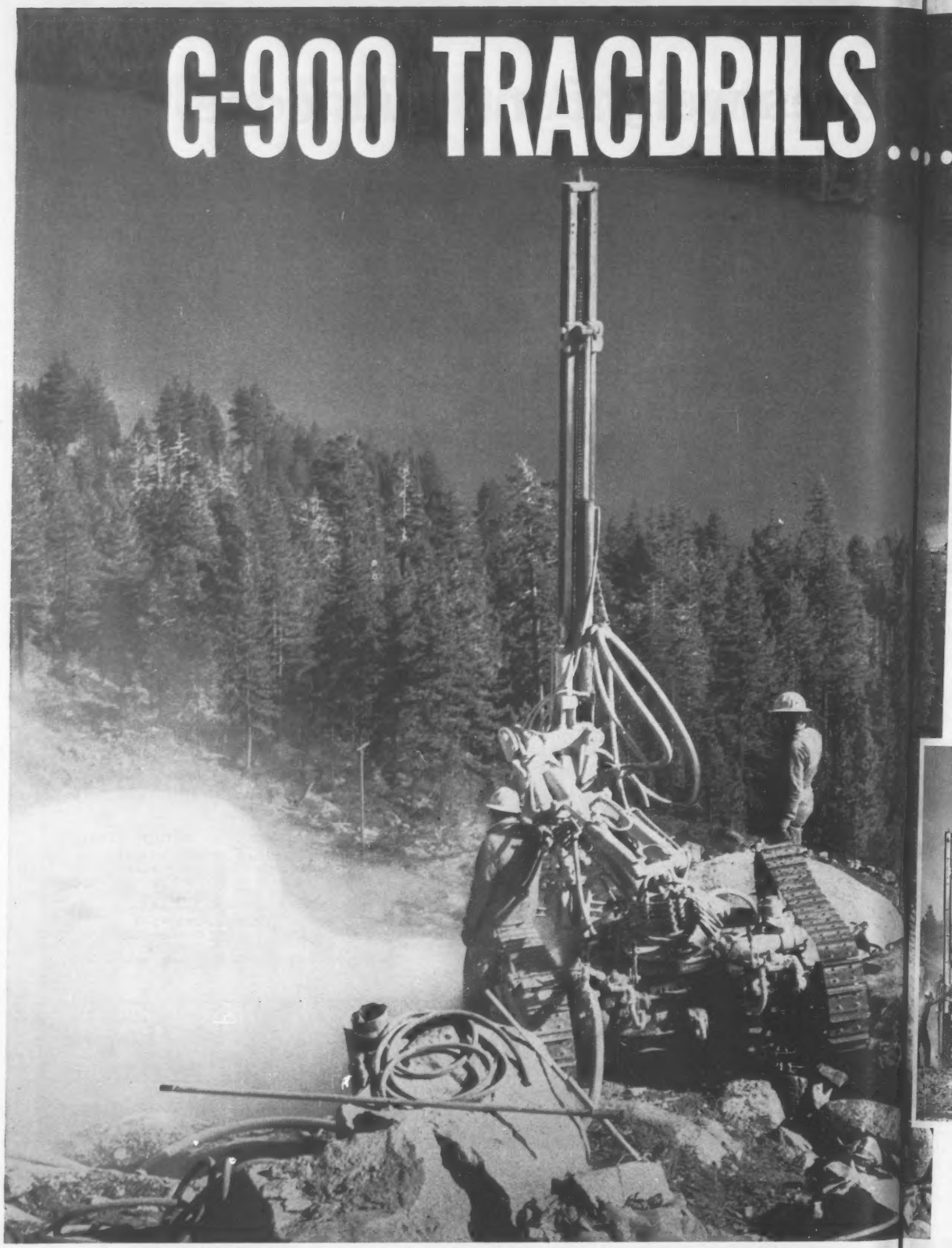
G-900 TRACDRILS...



HIGH ON THE DONNER PASS in the California Sierras a G-900 Tracdril sinks blast holes from the toughest of footings.

. . . prove their power and stamina in Donner Pass

THIS "JOB-BEATING" REPUTATION MEANS FOOTAGE RECORDS FOR YOU!

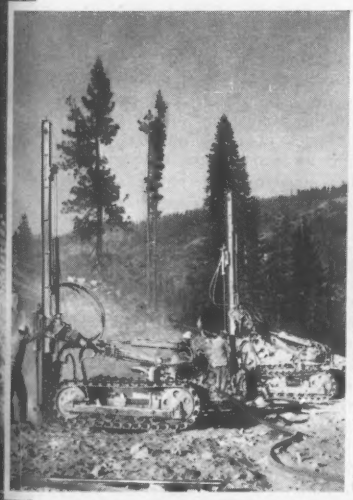
They're relocating Route 40 through the Donner Pass in the California High Sierras. They've got drilling problems that match the roughest conditions you'll ever find. High altitude, treacherous footing and hundreds of thousands of cubic yards of rock scheduled for removal. And they're moving the job along fast with teams of Chicago Pneumatic G-900 Tracdrils, backed-up by "Power Vane" 600 Rotary Compressors.

Operators find the *new* G-900 a mountain man's drill. It's got everything a driller expects from a high production rig . . . and it's got some real exclusives too! There isn't another track-mounted drill made that gives more surface or face coverage from one position. It can drill directly alongside tracks with full 180° swing. It handles horizontals 11 feet high at the face . . . snake holes at ground level. You can't beat a G-900 for safety! Release tramming throttles and heavy-duty brakes lock automatically . . . keep drill from shifting or creeping . . . hold on really bad ground.

Write for your copy of the new bulletin SP-3267 on the revolutionary G-900 Tracdril. *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

Chicago Pneumatic *8 East 44th Street, New York 17, N. Y.*

AIR COMPRESSORS • PNEUMATIC AND ELECTRIC TOOLS • AIR-BLAST BITS • REICHdrills • ROCK DRILLS



FAST-ACTING, labor-saving hydraulic cylinders ease driller's work load . . . two sets of grouped controls — one at turret, the other at boom end — save time and steps. The G-900 can drill true vertical holes at right angles to tracks . . . reach 63 inches beyond them!

ONE OF SEVERAL BATTERIES of CP-600 "Power Vane" Rotary Compressors feeds air to groups of G-900 Tracdrils in the high altitude conditions of the Donner Pass. Back up your air-powered equipment with "Power Vane" Rotaries . . . you get the portability, low maintenance and "hands-off" operation you need for the toughest jobs.

"HYDRA - POISE" KNEE - ACTION gives the G-900 Tracdril unmatched maneuverability and stability in rough country. Independently operated, extra-long crawlers provide 1350 square inches of ground contact.

Killing blow! It takes only minutes for fire to burn your business to a crisp. Guard against the danger of a crippling flammable-liquid fire (as in the spray booth above) with a *fully automatic* Kidde carbon dioxide extinguishing system. Approved by U.L. and F.M., Kidde systems smother flammable-liquid and electrical fires in seconds, leave no mess, turn off power and sound alarms... get you back in production fast. Kidde's 35 years of experience can help you protect any hazard. Write Kidde today and find out how.

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Reader Comment

Too Much Renewal?

SIR—It would seem that redevelopment in Philadelphia involves a lot of shifting about of chimneys as well as buildings. Note the structures flanking Independence Hall in your before and after shots (ENR Oct. 13, p. 42). Better keep an eye on those fellows in the dark room I guess.

In any event, Philadelphia is doing a remarkable job and you are to be commended in taking the time and space to report it. It is indicative of where our cities must head if they are to head anywhere at all. Incidentally, if you would like to see what a smaller city can do in this regard, I respectfully suggest you pay us a visit sometime. No doubt you know we have the largest per capita program of the country and we are tenth in absolute figures.

WILLIAM R. MCGRATH
Director, Dept. of Traffic & Parking
New Haven, Conn.

SIR—If the picture shown as having been taken in 1952 is correct, the rebuilding project around Independence Hall has not only been colossal but one of unprecedented magnitude. Not only is the east wing of Independence Hall now on the west, but streets and buildings have likewise been moved.

W. R. PITMAN
Kennewich, Wash.

Editor's note: We flipped; the picture flopped—Philadelphia didn't.

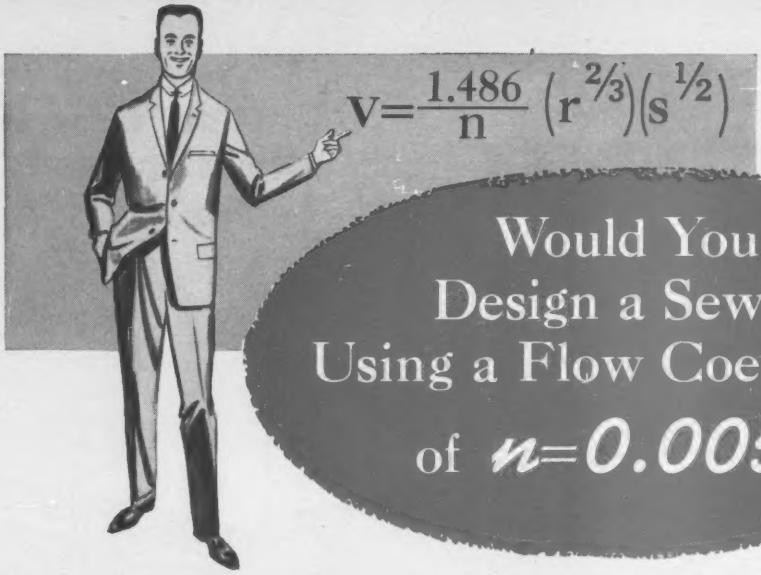
The Right to Manage

SIR—I have just finished reading your article entitled "Court Curbs Contracting Out" (ENR Oct. 20, p. 113). In thinking about this article and previous ones in ENR on the subject, I begin to wonder just what is the job of management if not to decide in what manner business operations will be conducted.

Following the line of thought of the U. S. Supreme Court in its ruling in the Warrior Navigation Case a company could not contract out part of the work which it receives in a contract without first submitting to arbitration. In so doing management becomes a function of the unions. I disagree.

JAMES F. HOLZBACH
Arlington, Va.

Editor's note: The Warrior case is primarily a challenge to industrial management. The challenge is to use labor contract language that protects the right to manage. The importance of the case is that inclusion of arbitration provisions in a union contract may threaten the freedom of contracting out unless the right to contract out is clearly exempted from the operation of the arbitration machinery.



Would You Design a Sewer Using a Flow Coefficient of $n=0.005$?

Of course not! Nor would any pipe manufacturer with the public interest in mind recommend it. Even though recent tests at the National Clay Pipe Manufacturers, Inc., Research Laboratories show that Vitrified Clay Pipe offers a coefficient this low, it would be highly misleading to base design recommendations on the results of these tests.

Under more favorable test conditions, it would be possible to bring the Clay Pipe "n" factor down even lower. But what would it prove? Certainly not that the Engineering Profession should abandon its own use-proved value of n=0.013 for n=0.005, for n=0.010, or for any other promotion-slanted value.

NCPMI member companies believe the Engineering Profession itself is best qualified to determine the flow factor to be used in designing the nation's sewer systems.

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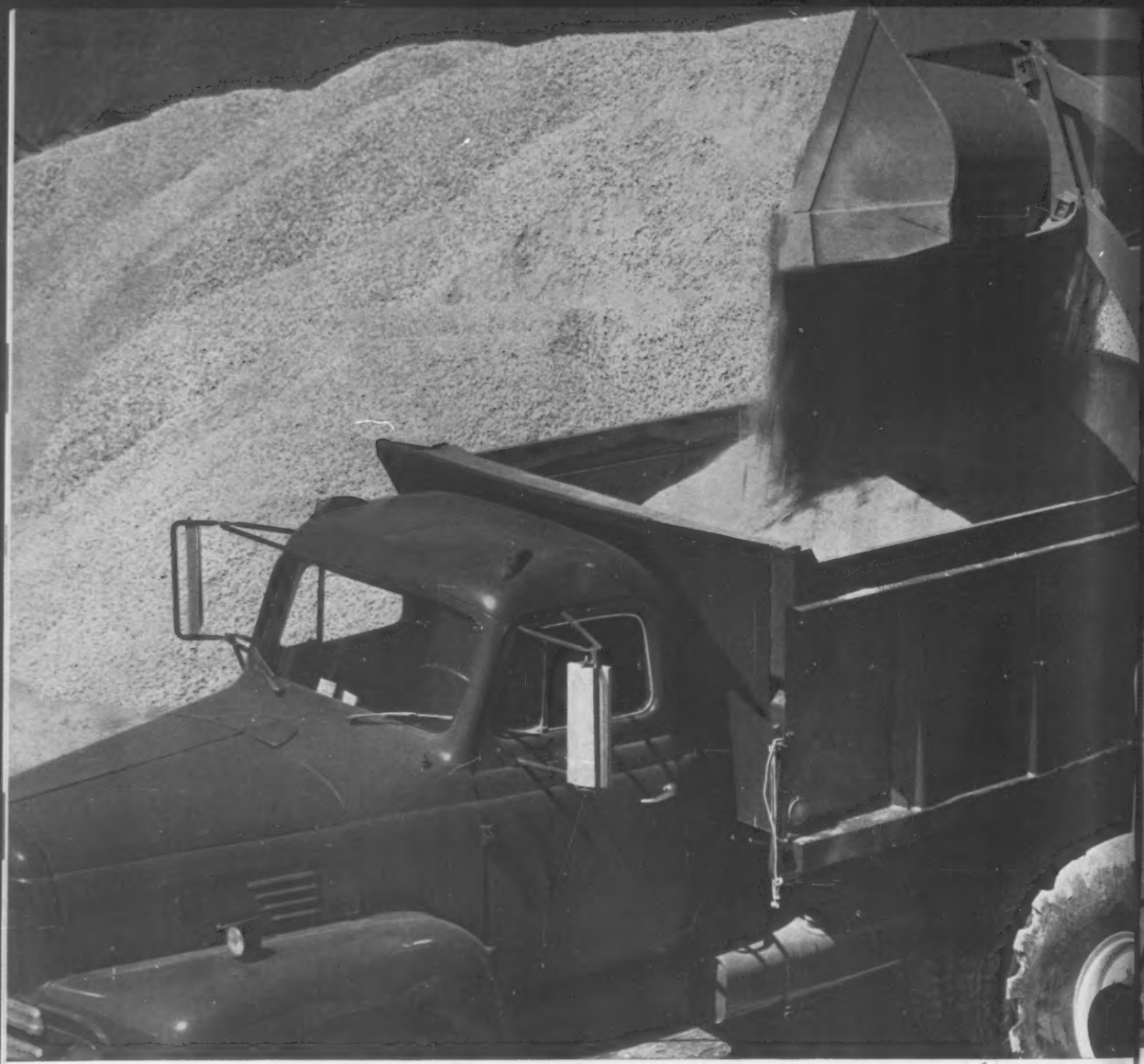

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Unmatched filtering protection—that's what you get in all Allis-Chalmers tractor loader models.

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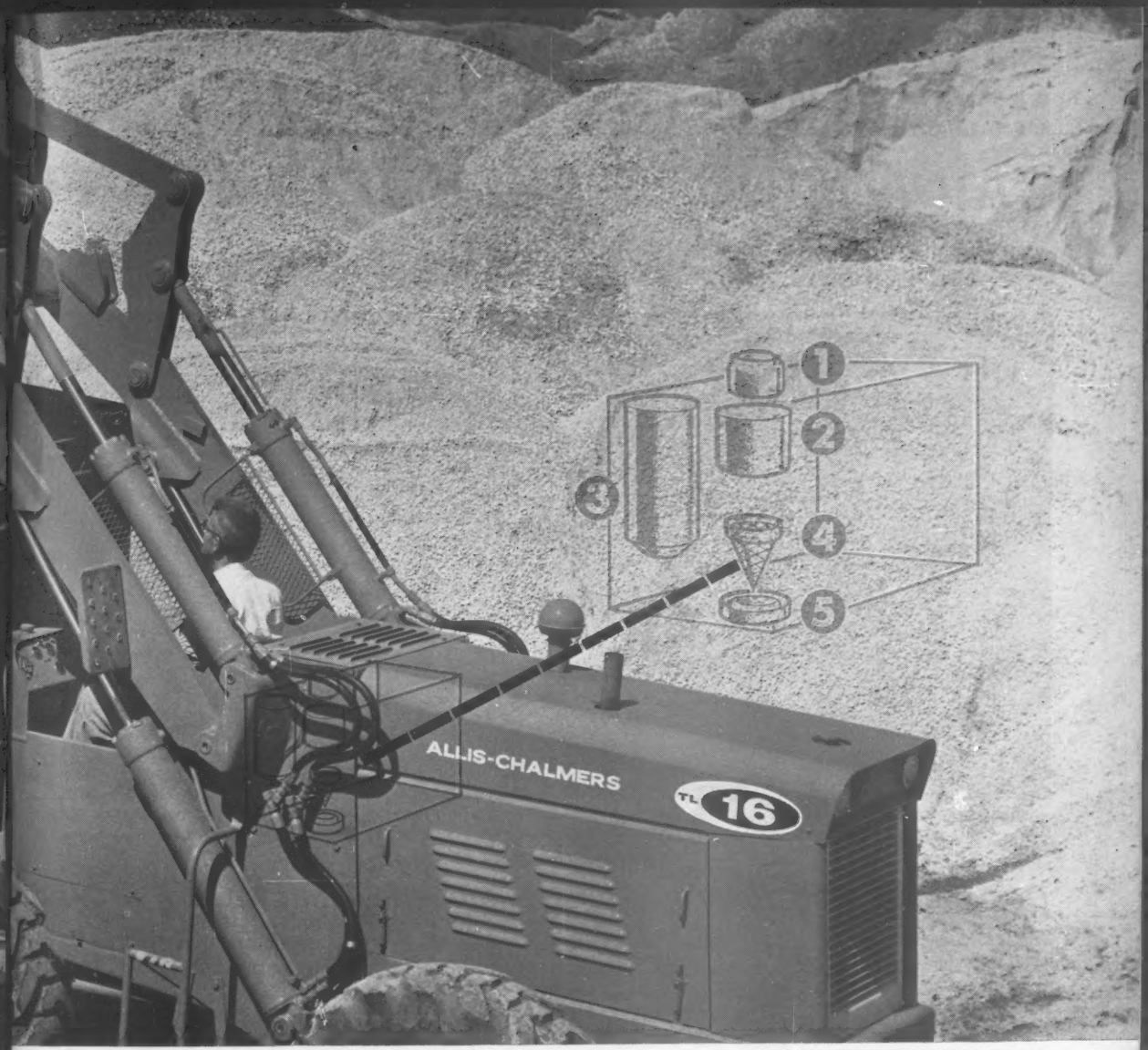
3. full-flow micronic filter
4. conical screen
5. magnetic filter

This 5-way filtering protection brings peak hydraulic operating efficiency . . . extended service life.

move ahead with



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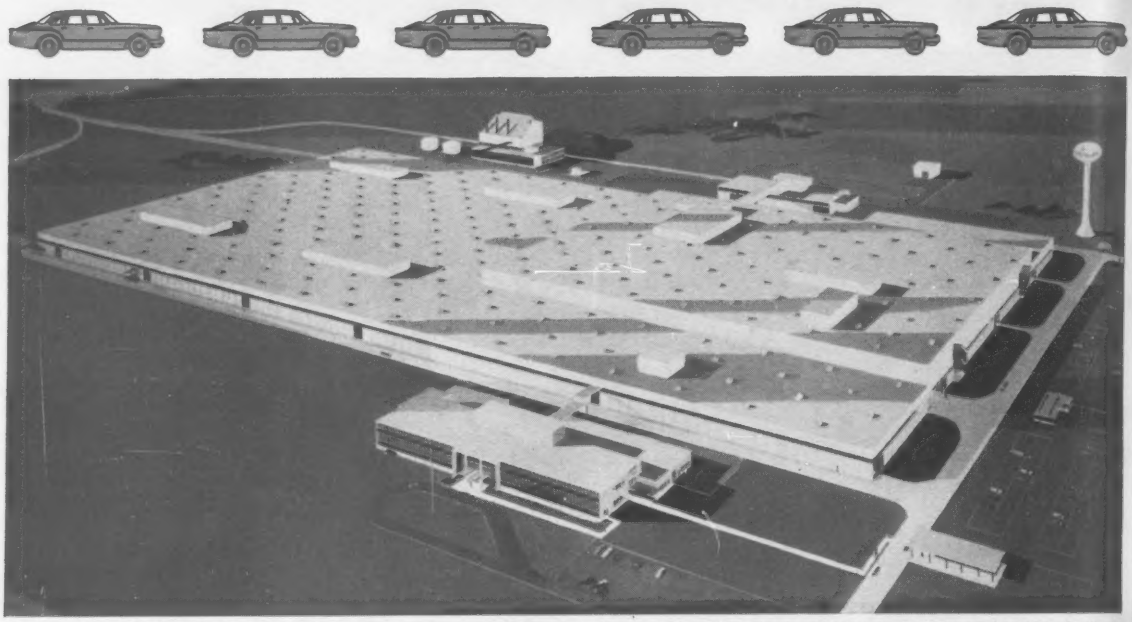

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ENGINEERING NEWS-RECORD

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semiannual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

BID PRICES UP—The U. S. Bureau of Public Roads "composite mile" bid price index went up 2.2% in the third quarter to 13.6%, based on 1946 as 100. The rise reflected higher bids on excavation, surfacing, structural steel, concrete and composite structure work. Only reinforcing steel work bids trailed the second quarter.

IN TEXAS, IT'S BUY AMERICAN—Use of foreign-made materials in all highway construction projects in Texas will be prohibited after January 1. The Bureau of Public Roads is agreeable to the restriction ordered by the Texas Highway Commission. Importing groups have indicated they will fight the order in court (ENR Sept. 1, p. 70).

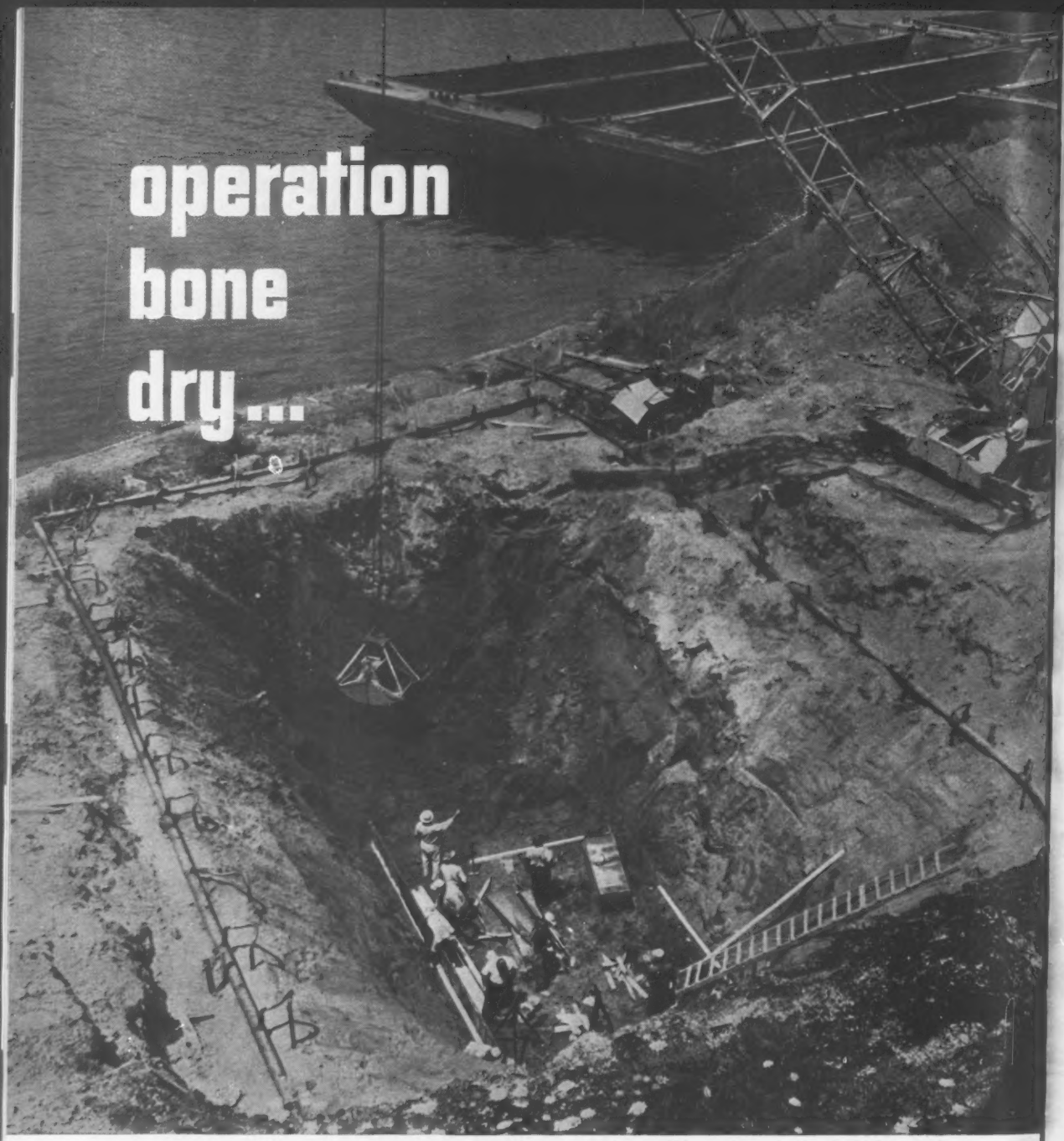
SEMI-ANNUAL DINNER?—The American Institute of Consulting Engineers ran a dinner during the ASCE convention in Boston last month, called it the "Annual Dinner" on the program. Now the Institute is busy trying to inform its members that the Boston dinner was only a regional affair, the real Annual Dinner will be November 29 in New York City. Gen. Lucius D. Clay will speak.

PRESTRESSED CONCRETE OUT—Plans for including a prestressed concrete alternate in a call for bids on runway and taxiway paving at Fairchild Air Force Base (ENR July 14, p. 31) have been dropped. Bids on reinforced and conventional concrete alternates will be opened next week.

CREDIT CARDS HONORED?—Provided the spy scares die down, tourists should find Moscow a more comfortable place in a few years. The Russians plan to start a 12-story, 3,400-room hotel near Red Square next year, and they're scheduling several others for completion in time for the Moscow World's Fair in 1967. So reports Tass, the Soviet news agency. One hotel, called the Sputnick Hotel, is now under construction.

FLORIDA PROBE WIDENS—The investigation into "payola" in Florida's highway program (ENR Oct. 27, p. 26) has been extended to alleged irregularities in right-of-way dealings. More than 20 land speculating firms are to be investigated, including one or more in which a member of the State Road Board allegedly is involved.

VIRGINIA SHOOTS SANTA—Virginia Highway Commissioner H. H. Harris has asked the state's construction and construction materials firms to refrain from sending "Christmas remembrances" to the department's employees. Reason: "Highway investigations are the order of the day . . . We must be above any taint of suspicion."



GRIFFIN **Solves Another Dewatering Problem!** This river-bank pumping station job on West Virginia's Ohio River required speedy predrainage so foundations could be completed during low water level. A Griffin drive-casing sand-wicked Wellpoint system was installed (through silt, sand and clay layers) in 3 days. 48 hours later, pumping had dropped ground water 20' below the Ohio, and the bottom slab was poured . . . Further proof of time and money saving advantages of rapid installation and smooth operation of Griffin Wellpoint equipment.

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WASHINGTON OBSERVER

- **Launch pads at sea?**
- **You can't cancel a contract that isn't yours**
- **Bomber bases underground?**

● **The government is considering a proposal for construction of rocket launching complexes at sea.** Two companies, Aerojet-General Corp. and Todd Shipbuilding Corp., seek funds to support detailed engineering studies of the project and to determine comparative costs of ocean-launch systems and land installations. They have presented their plan to the Defense Department and the National Aeronautical and Space Administration.

Aerojet-General is primarily a rocket builder, but the company has also designed and supervised construction of rocket launch sites. Todd has built vessels to haul giant rockets and off-shore drilling platforms. The two companies say that ocean-launch facilities are "feasible and inevitable." They point to the eventual use of giant chemical rockets with over 1 million lb of thrust and to neuclear-powered rockets; and they claim ocean-launch sites will reduce critical problems of design, water supply and safety.

They have proposed several ocean-launch concepts: coastal cliff sites. off-shore pier sites, missile drydocks and modified Texas towers. Their most ambitious plan, a "planetary rocket ocean platform" (PROP) envisages a huge buoyant sea-base for use in fabricating, assembling, static testing and launching large missiles or space vehicles.

—

● **The Air Force and other officials dealing with jurisdictional disputes on missile bases have suffered a setback** in their attempt to make a test case out of a situation at Forbes AFB, Topeka, Kan. (ENR Nov. 3, p. 82).

Officials discovered that the communication system is being built by IT&T for lease to the Air Force—but the construction contract was not let by the Air Force. Thus the Air Force has no legal way to cancel.

The dispute arose when the contractor did not follow a Joint Board work award.

—

● **Renewed development of the faster-than-sound B-70 bomber also revives talk about hardening of bomber bases and facilities.** The Air Force has made a thorough study of building underground hangars, underground storage depots, control facilities, and super-reinforced runways.

There's been no conclusion reached so far, and the new money for B-70 development, some $55 million, will be used entirely for a flying and test aircraft. The Air Force realizes that base hardening is so expensive, that perhaps dispersal is the most feasible protection for their big planes.

—

● **Consolidation of school districts has been accomplished in many parts of the country, but there are still too many systems.** That's indicated in a new Census Bureau survey.

Since 1942, the number of public school systems has been more than cut in half—but there are still 42,429 of them.

Some states have an entire system with only a handful of pupils. Consolidation of districts gives educators more funds to improve buildings, increase salaries and provide a wider range of teaching.

The Motor City's New Convention Facility Stands On RAYMOND Foundations

General Foundation Contractor: Darin & Armstrong, Inc. Architects and Engineers: Giffels & Rossetti

Rising proudly on a foundation by Raymond, Detroit's new Cobo Hall completes the vast complex that is the city's Civic Center. With the new City-County Building and the Ford Auditorium (both also on Raymond foundations), Cobo Hall furnishes the ample convention facilities that have been so sorely needed in this booming city. Including 1,632,990 square feet of usable space and room for 12,500 people at meetings and other functions, Cobo Hall will first play host this October to the National Automobile Show. *The Foundation:* 4,341 one hundred and eight foot pipe step-taper piles, for a total of 468,828 linear feet. Detroit's Cobo Hall is another new star in the galaxy of great public buildings large and small, supported by Raymond Foundations. So whatever your needs in foundation construction, give us a call. We can handle almost any problem with men, materiel, and experience – quickly and economically.

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Foundations For The Structures Of America
Complete Construction Services Abroad

ICBM construction chief, Gen. A. C. Welling, tells ENR interviewers . . .

What's Ahead in ICBM Construction

Early in August Brig. Gen. Alvin C. Welling assumed command of the newly established Corps of Engineers Ballistic Missile Construction Office. His mission was to take over the lagging ICBM construction program and keep it on schedule. In an exclusive interview with two ENR correspondents General Welling reports on the program:

QUESTION Several months ago there was a construction industry report on ICBM base construction problems submitted to the Defense Department. It complained about specification deficiencies, the frequency of specification changes, the issue of multiple inspections, delays in receiving government furnished equipment and the need for prompt and final decisions at the contracting officers' level. Do you believe these problems have now been resolved?

GENERAL WELLING These conditions have not been eliminated and, therefore, to use your word, they probably haven't been resolved to the satisfaction of everyone, including me. But the situation has been improved.

Q Referring to such things as multiple inspections and like matters, is it pretty well understood now that the contracting officer for the Corps of Engineers is the sole authority responsible for all decisions on the construction contracts at missile bases?

A The necessity to do that has been rather well smoothed out, in my judgment.

Q Under the reorganization setting up your office, where do district engineer offices fit into the picture?

A The district engineers are involved in what we call support functions, acquisition of real estate, recruiting personnel for us, providing administrative services, and for any special functions which we may call upon them to do. But my new office is clearly in the chain of command, and they are clearly out of it.

Q How many contracting officers have you?

A Four, one for each of my divisions.

Q What are the responsibilities and the authority of the area engineer? Is he the direct representative of the contracting officer, with authority to act for him?

A We have given him authority in the contracting field up to $500,000, whereas previously he had authority up to $25,000. Now, we do not give him any authority to extend time for excusable delays.

Q Do you now have any provision for premium payments for beating any kind of schedule?

A Perhaps you get your premium payments in reverse. A man who makes provisions in his bid for the possibility of liquidated damages in case he finishes late gleans unto himself as a profit those liquidated damages if he performs on time.

Schedules

Q General, can you give us a brief status report on ICBM base construction?

A As far as I am concerned, every base is behind schedule until the construction is completed. When you get into the business of schedules, you have to consider which schedule you are talking of. There are many schedules. In advertising the project, for instance, the Engineers generally allow themselves a cushion and establish a contract completion date one month short of the Air Force-directed completion date. The ICBM contract also establishes interim completion dates that are frequently referred to as milestones. Thus, in the construction contract, we have a second set of dates or a second schedule with many interim dates and interim schedules.

Next we have the contractor's construction schedule, and sometimes that construction schedule has a completion date inside the contract date. At a construction project where my office assumed command a couple of weeks ago, the contractor and the district engineer had an approved construction schedule contemplating construction completion well within the dates established in the contract. Finally, the contractor has usually, for internal use, his own schedule within the construction schedule approved by the contracting officer.

Even those are not all the schedules in this business. For one reason or another, there are changes in the job as we proceed, and those changes tend to affect construction schedules. We then go to arrangements and schedules for joint occupancy of our facilities by the missile contractors of the Air Force.

The final completion date of the contract, which is what contract administrators normally are driving for, is not a really critical operational feature of our construction program, because the final completion date involves the final swish through the project to see that the last sod is planted, the last shower

. . . In the business of construction, nothing is ever resolved once and for all.

. . . We can't take a list of firms and say these people are forever qualified to bid.

. . . We have to know the contractor's general qualifications, his capability now.

works, the last paint scratch comes off the door, and that sort of thing.

A construction contractor can be behind on his final contract completion date, he can be liable for liquidated damages, and yet the facility or portion of a facility which the Air Force contractors need for their operation is available to them.

We have resorted to the principle of a joint occupancy, and are so far meeting the joint occupancy dates.

Pre-qualification procedures

Q Can you explain briefly the mechanics of qualifying contractors? Do you have a prepared list of qualified contractors who are the only ones to get your invitations to bid?
A We have through various devices attempted to inform the construction industry that for future ICBM construction there would be pre-qualification of bidders in most instances, and we have indicated the kind of information which is needed by our selection board.

The board has been in operation and has considered a large number of contractors. I don't believe I can give you the number.

We have notified those whom we have considered qualified to bid on Davis-Monthan (Air Force Base Tucson, Ariz., a Titan II base), for instance. We can't in this business, however, take a list of firms and say that these people are forever qualified to bid on ICBM construction projects. They have to be qualified to bid at the time of the invitation to bid.

Q Is it conceivable that a contractor already working on one or two sites would be qualified to work on a second or a third site simultaneously?
A It is conceivable, especially through a joint venture arrangement.

Q In your competitive bidding by pre-qualified bidders, are these unit price bids or is a lump sum bid ever asked for?
A We shall continue to use the same form of bidding documents which we had before, and those end up being lump sum.

Q How many construction firms have been selected as qualified bidders, and how many companies have applied for such pre-qualification?
A Mind you now, the only final decision pertains to Davis-Monthan, which is our next job. We can't give you a figure as to how many firms may be qualified to bid on future projects.

Q You mean this pre-qualification procedure will be on a base-by-base basis?
A Well, it has to be based on the current situation. It can't be based on a general condition six months ago if we are going to advertise today. We have to know what the contractor's general qualifications are, and we have to know what his capability is now.

Q Then there is no one master list?
A There is a master list of people who appear qualified to bid on ICBM work, but that list has to be refined before we advertise on a project next June.

A contractor whom we now have on our approved list may successfully bid some new ICBM base. He may obtain some huge jobs from industry. If that becomes the case, we are going to consider quite carefully whether a contractor who today may be permitted to bid on a new project should also be permitted to bid on new work months hence if, in our judgment, his capacity is already over-stretched.

Q In other words, the master list is used just for circularizing the advance notices?
A It has to do with the jobs which are immediately coming up for advertising.

Q What is the schedule of advertising for the upcoming jobs?
A 24 October, Titan II, Davis-Monthan; 1 November, Titan II, McConnell (AFB, Wichita, Kan.); 4 November, Minuteman, Malmstrom (AFB, Great Falls, Mont.); and 14 November, Titan II, Little Rock (AFB, Little Rock, Ark.). But the timing, the capability of these firms has to be considered in relation to time as to now, and you can't come out with a list and say these firms are forevermore qualified to bid on ICBM construction projects.

Q Could you summarize, in general, the criteria for pre-qualification of contractors?
A Yes. Our criteria sum up something like this:

- The board which we have established has to satisfy itself that the history and prospect of performance of the contractor is satisfactory to a degree, consistent with the national urgency of the program.
- Experience in work of magnitude and complexity comparable to that under consideration and evidence of construction skill as to the main features of the work.
- Ownership or ready access to facilities and equipment required for the performance of the work being advertised.
- Record of performance as to time and quality.
- Adequate financial resources and financial history with regard to meeting trade obligations, payroll obligations, and state and federal tax liabilities.
- An adequate staff of experienced managerial personnel vested with adequate authority and immediately available who will be committed to the job.
- Labor relations record.
- Record of business and financial know-how and integrity.
- Record of contract administration.

Those are features which must be considered and essentially be answered on the plus side.

Q What is your policy on so-called bid brokers or job brokers? Are they prohibited from bidding?
A We have a directive from the Chief of Engineers that a prime must be pre-

. . . Every base is behind schedule until the construction is completed.

pared to perform at least 15% of the work.

Now, for a job such as the first phase of Titan II, we are considering upping that 15% because that job is essentially an excavation, steel and concrete operation, whereas the 15% figure had in mind the follow-on work, which is electrical, mechanical and the propellant loading system, as well as the items I just mentioned.

Negotiated contracts

Q Has the question of negotiated contracting as opposed to formal advertised bidding been resolved once and for all?
A Well, in the business of construction in and out of government, nothing is ever resolved once and for all. We have instructions out in Los Angeles from the Chief of Engineers telling us to pre-qualify contractors, and that is on the basis that those pre-qualified contractors will be permitted to bid on a competitive basis.

Q There was published speculation several months ago, Army Engineers was to turn to negotiated contracting similar to the procedure used by the Air Force in negotiating with missile manufacturers.
A There is nothing in the instructions to me from the Chief along those lines, and I am not fighting these instructions.

Air Force—Corps relations

Q Does the Air Force have a direct say on the selection of the contractor?
A Well, they have a say as to who is going to bid, but when you get down into the legality of it, neither I nor you, nor the Chief Justice can say to whom the contracting officer is going to award his contract.

Q That is the legality. I mean in actual operation. In other words, does the Air Force have to approve the selection of the actual construction contractor?
A No, nor do I. That is the prerogative of my contracting officer in each case.

Q On design changes by the Air Force, does the Corps of Engineers have an opportunity to confer with the Air Force and with its architect-engineer on the original design plans or on design changes that may be made later?
A Yes. Out in Inglewood (Calif.), my engineering division is in the same building as the facilities deputy for the Air Force's Ballistic Missiles Division, the facilities deputy being charged with the design of these projects. We are in daily and voluminous contacts with the design forces of BMD, and their architect-engineers—formal conferences, ad hoc meetings, telephone calls, personal discussions.

Labor relations

Q What is the present labor situation on the missile sites?
A During the time that I have been connected with this ballistic missile construction effort, the labor relations have gone smoothly enough. There have been difficulties, but the difficulties which we have experienced have not been of major consequence.

Q Do you have a labor relations officer at each site?
A We have a labor relations man in our own office who had been a labor relations man for the Missouri River Division.

Q Where you have joint occupancy, is he the responsible man in working out any labor questions that may arise?
A Working out relationships between the Engineers and Air Force is a joint operation between the area engineer and the site commander.

Q Have the labor difficulties which have occurred in the program been primarily of a union versus management nature, or union versus union nature?
A I am not able to comment on that. Most of the difficulties that you have referred to occurred before I August. I believe that the overwhelming importance of this ICBM program has in recent months filtered down to all of us officials in government.

Outlook for future ICBM bases

Q Can you give us some idea of the magnitude of ICBM base construction contracting that still is to be done? There are four more Titan bases to be contracted for, is that correct?
A Yes, each base will be for two squadrons.

Q That is the end of Titan?
A Of eight squadrons.

Q What about Minuteman? Can you give us some idea as to what the construction outlook might be on Minuteman as compared to the scope of work that has been done with Atlas and Titan?
A I am not privileged to discuss how many launchers there will be. We have no firm information beyond the Montana Minuteman squadrons and the eight Titan II squadrons.

Q One of the problems in Atlas and Titan was the fact that both missiles were conducted in a so-called concurrent development manner. The bases were being built as the missiles were being tested. Is anything being done to minimize construction specification changes on Minuteman, which is still in development?
A The Air Force is performing the design, and the Air Force is well acquainted with the necessity from many points of view of minimizing the impact of design changes once base construction has started.

But I believe that on Montana Minuteman there are going to be design changes which are in excess of the construction industry norm. We want the contractors to be well advised of this probability, and I have asked my people to put this in the contract documents themselves.

We are doing our best for Titan II and Minuteman, with your help, to alert the industry to what is involved in building a ballistic missile base, and, of course, we have a special condition in Montana Minuteman where construction forces are going to have to be mobilized for a construction start during the winter.

The Election and Construction

What will the new Administration and the new Congress mean to construction? How does the voter's response to construction bond issues affect you? How did construction men fare as candidates? How potent was labor's effect on the vote? Next week, ENR answers those questions in depth in a special report.

A New Home for the Old Garden

Plans have been announced for a new $38-million Madison Square Garden and entertainment complex on New York City's growing West Side. Should the project go ahead as scheduled by Graham-Paige Corp., the Garden owner, the new sports and convention center will be open in time for the 1964 New York World's Fair.

Expanded far beyond the present Garden in both size and function, the new complex would include a 25,000-seat main sports arena, a combined theatre and auditorium, a restaurant building and a sports arena for smaller events. There would also be indoor and outdoor swimming pools and a skating rink.

Present plans call for the entire group of buildings to be tied together with an open pedestrian concourse elevated above the street.

The new Garden plan will take up three city blocks. Preliminary talks with city officials indicate the city approves the corporation's plans in principle. They include off-street parking space for 3,000 cars on three sides of the center in two decks below street level.

The center's structures will use the latest innovations in prestressed and post-tensioned concrete, says Charles Luckman, architect for the project. Structural engineers for the project have not been named.

The main sports arena will probably rise on flaring reinforced concrete buttresses from a 120x240-ft base plane and be topped by a cable-suspended roof hung from an elliptical ring girder measuring about 300x500 ft in plan, according to Charles Stanton, vice president in charge of the project for Charles Luckman Associates of New York.

Mr. Stanton said the arena's roof would probably be a plastic board material sprayed with a concrete coating. All seats in the arena will have an unobstructed view of the entire floor. With the proposed shape, the designers plan to have 92% of the seats along the sides of the arena, departing from the present Garden's layout, where most of the seats are far removed from the center of the arena floor.

The three smaller buildings at the other end of the center will be circular, formed in concrete, and have roofs suspended in the same manner as the main arena. The theatre and auditorium building at one corner will seat 2,500 persons. The smaller sports building, at the other corner of the center, will be a double-tiered structure with a 2,000-seat arena on its upper level and a 1,000-seat arena on its lower level.

Toward the center of the site, the restaurant building, rising above the elevated concourse level, will overlook the ice skating rink and outdoor swimming pool. These parts of the center will be at street level with the raised concourse shaped around their perimeter. In winter, plastic domes supported by air pressure will cover these two areas.

The pedestrian concourse will provide access to all the main structures above street level. Spectators entering the Garden at concourse level will be at the midpoint of the sloping banks of seats and will go only a short distance up or down to their seat location.

Traffic Rolls on Chicago's $237-Million Expressway

Chicago's 19-mile Northwest Expressway opened to traffic last week after six years of construction.

Nearly seven miles of the $237-million expressway contain ten 12-ft lanes —four lanes in each direction plus two reversible lanes in the center median. The remainder is an eight-lane divided freeway.

At its southern end, the road connects with the Congress Expressway near Halstead St. Then it crosses the Chicago River and angles northwest to a connection with Edens Expressway at about mid-length. The road joins the Illinois tollway system at O'Hare International Airport.

Pavements are 10-in. reinforced concrete on a 6-in. granular subbase. Construction required 9 million cu yd of excavation, 800,000 cu yd of concrete, 60,000 tons of structural steel and 25,000 tons of reinforcing steel.

Geologists Meet

Groundwater problems spotlighted at Denver

Groundwater and the problems it creates in construction got a thorough going over from geologists at the 72nd Annual Meeting of the Geological Society of America in Denver last week.

Land subsidence caused by the withdrawal of fluids in California and Japan was reviewed by Mr. Joseph Poland of the U. S. Geological Survey. Mr. Poland reported that latest records of water levels at Long Beach Harbor, in California, show the subsidence caused by oil wells has been halted by repressurizing oil-bearing sands with oxygen-free salt water under extremely high pressure (ENR Nov. 12, 1959, p. 26).

Four Japanese harbor areas plagued with ground subsidence due to the removal of groundwater for industrial use were discussed. Waterfront land at Tokyo has sunk over six feet. At Niigata Harbor subsidence has become serious as dissolved gases come to the surface in groundwater used by some new chemical plants in the area.

Three papers were presented by officials of the California Department of Water Resources with a rather upside-down version of the problem. They described unusual subsidence in the San Joaquin Valley, where settlements measuring up to 10 ft have developed when irrigation water was applied to the surface of certain compactible or unconsolidated soils.

To combat this type of settlement, known as shallow subsidence, studies are under way on methods of precompacting such soils by flooding (ENR June 30, p. 37).

Robert Legget, of the National Research Council of Canada, described a groundwater problem at a hydro development in Quebec. Construction of the reservoir raised the groundwater level above a nearby town situated on a lake which lies in a sand plain north of the plant. The level of this lake would have risen to correspond to the new water-table, but a permanent pumping installation was built to maintain a safe lake level.

Ten papers on more theoretical studies were also presented at a second groundwater symposium sponsored by the newly formed Geohydrological Group of the society.

The society's Division of Engineering Geology sponsored a general session where papers were presented dealing with the geological aspects of concrete deterioration, weathering of clays and shales, and the treatment of loess in construction.

Nearly 2,500 members attended the four-day meeting.

Architect says Londoners will eventually get used to . . .

The Eagle Over Grosvenor Square

Conservative Englishmen, some of whom are startled at the design of the new U. S. Embassy building in London, probably found little succor last week in the defense for the structure offered by architect Eero Saarinen.

"Fifty years from now," the architect said, "it is going to look a lot different." While the building might now look a little too gaudy for staid Grosvenor Square, the soot and rain of London will change all that soon (soon, from a historical point of view), the architect argued. The Portland stone will grow darker, the gold-anodized trim "will tone down some," and even the big bronze eagle perched atop the structure will seem less obtrusive—all in good time.

Despite considerable popular controversy over the suitability of this modern structure in its neo-Georgian surroundings, informed critical response has been generally good. In fact, the main reservation of the TIMES OF LONDON was that the building lacked the "adventurousness" that characterized some of Mr. Saarinen's other designs.

The facade features interlinked precast concrete box frames faced with stone. Gold-anodized aluminum extrusions decorate various points of the box frames. The extrusions also appear on points of the diagonal grillage about the ground floors, and in the parapet wall that crowns the building and screens elevator and ventilating equipment. The sculptured American Eagle with a 35-ft wing span hovers above the top floor.

The entrance foyer has walls of marble decorated with a gold-anodized aluminum frieze, and features a shallow black mosaic-lined pool with fountain.

The building's structure is a combination of cast-in-place reinforced concrete, with some composite floor construction of prestressed, pretensioned planks, and precast concrete beams in the upper floors.

The six-story building has a total area of 225,000 sq ft of which 87,000 sq ft is office space. In addition to embassy and consular quarters, the structure will house United States Information Service facilities. Cost of the building is $4.5 million.

British associate architects Yorke, Rosenberg and Mardall worked with Eero Saarinen & Associates of Bloomfield Hills, Mich., on the design. Felix Samuely & Partners, London, were the structural engineers. Pauling & Co., London, was the prime contractor.

Holdout Province Joins Trans-Canada Highway

The federal government of Canada and the Province of Quebec have signed an agreement that will close a long-time gap in the 4,470-mile Trans-Canada Highway.

Quebec had refused to take part in the Trans-Canada Highway plan since the program's origination 10 years ago claiming that it had adequate highways between Ontario and New Brunswick (ENR Apr. 16, 1959, p. 38).

Under the terms of the Trans-Canada Act and its amendments, the federal government pays more than half the cost of the highway and the provinces pay the balance for construction within their boundaries. Quebec has spent some $57 million on highways that will become part of the trans-continental route, but it is unlikely the province will be reimbursed.

Work will begin on the Quebec section next spring. Completion is scheduled for December, 1963.

Y-Shaped Apartments for Miami

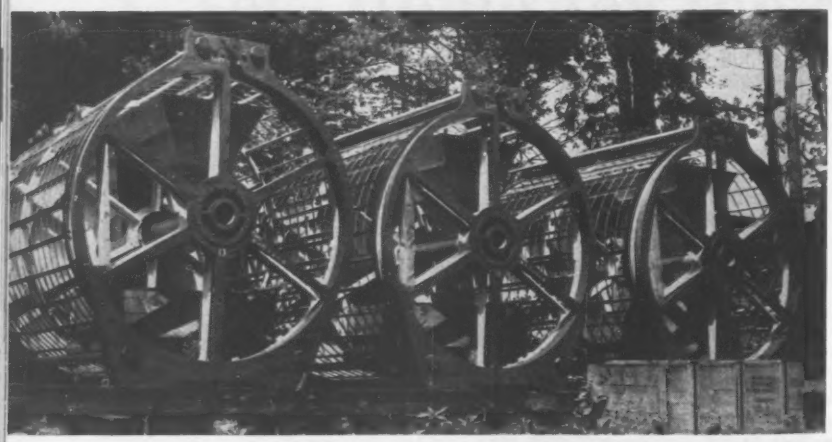
When the first of these two Y-shaped apartment houses is completed late this year, it will be one of the largest apartment units in Miami Beach, Fla.

The Y-shaped unit will contain 597 apartments. Each section of the Y is 240 ft long and 68 ft wide. Framing is reinforced concrete. A parking garage will run underneath the building.

The second structure, identical to the first, is planned for erection in 1961. A two-story shopping center will rise between the buildings.

The project, to be called Morton Towers, will stand on a 13-acre tract on Biscayne Bay.

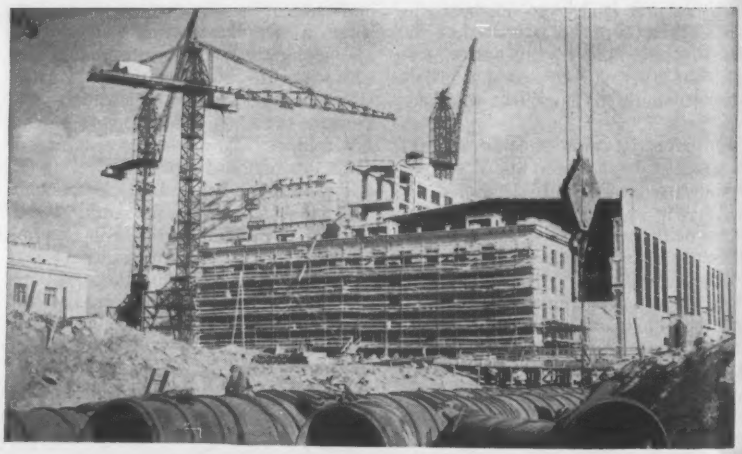
The architect is Melvin Grossman. Oboler and Clarke are the structural engineers. Robert L. Turchin, Inc., will build the structure. All are from Miami. Total cost of construction is estimated at $8.5 million.



Microstraining Water

Three 10-ft microstrainers are being readied for the Stamford (Conn.) Water Co. The utility will be one of the few in the nation to use the microstrainers alone to filter municipal water.

Finely woven stainless steel fabric covering the drums will pick up solids from water that enters an open end of the cylinder and leaves through the mesh. A mat formed inside the drum by these solids catches additional materials that would get by the mesh. The mat is washed away by water jets at each turn of the revolving drum.

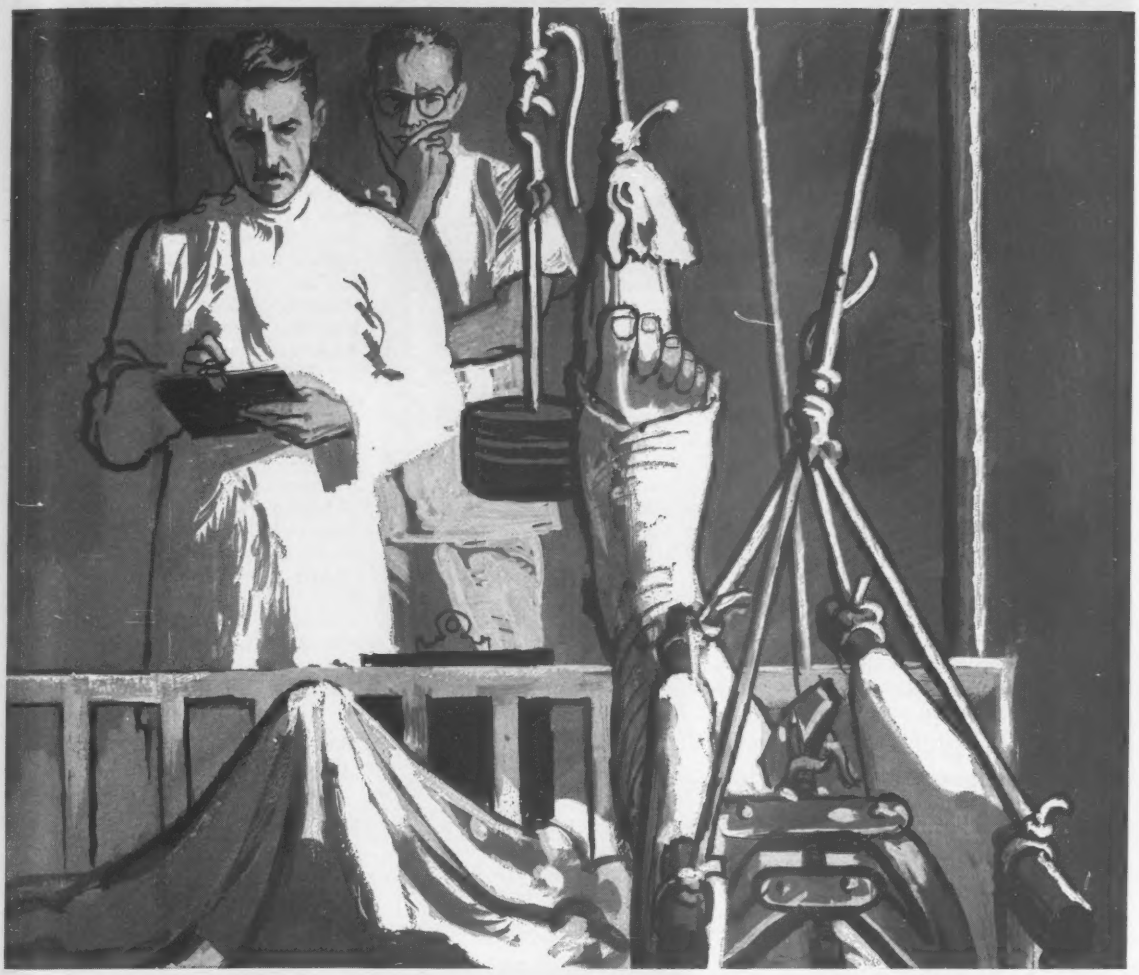


Russian A-Power Coming

Construction work is winding up at the Soviet's Kurchatov atomic power generating station (ENR July 17, 1958, p. 60). While crews join final sections of cooling water ducts, workmen complete the concrete shielding—in 15-ton blocks—around the reactor area at the left rear. The station is located on the Pyshma River in the Sverdlovsk region of the Urals.

PROTECTION IN DEPTH

How it helps cut compensation costs



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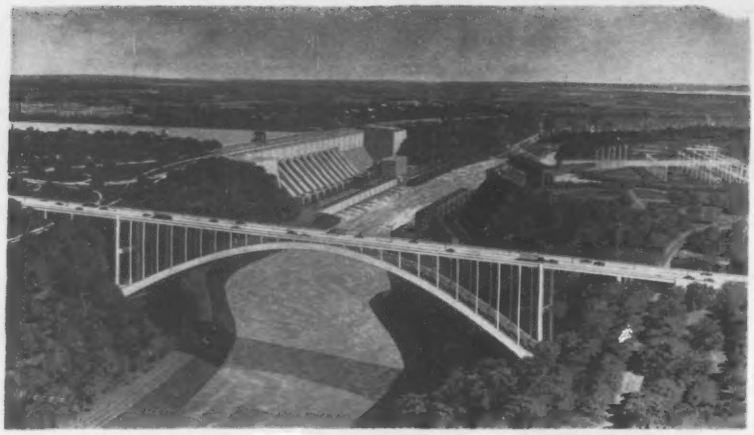

Long Arch to Span the Niagara

Contracts have been awarded for construction of an international bridge spanning the gorge of the Niagara River between Lewiston, N. Y., and Queenston, Ont. Estimated cost of the complete project—including a 1,000-ft steel arch bridge, approaches and terminals—is $10 million.

Designed by Hardesty and Hanover, New York consulting engineers, the bridge will be the longest hingeless steel arch rib in the world. Arch rise is 159 ft and the deck of the bridge will be 370 ft above the river.

The bridge is located adjacent to the northerly end of the power plant of the Niagara Power Project (ENR June 30, p. 26), about three-quarters of a mile south of the existing Lewiston-Queenston bridge.

The project will link major highways on both sides of the frontier. In Canada it will lead to the Queen Elizabeth Way and in the U. S. to the New York State Thruway.

At the Canadian end the project connects to a four-lane highway to be constructed by the Ontario Department of Public Works. On the U. S. side, connection will be to a four-lane expressway to be built by the New York Department of Public Works. There will be other connections to local parkways and roads at both ends of the bridge.

Extensive terminals will be built on both sides of the river to accommodate customs and immigration facilities; tolls will be collected on the Canadian side.

Starting at a concrete abutment on the top of the escarpment on the Canadian side, the river crossing will consist of two steel box-girder spans totaling about 270 ft in length, followed by the 1,000-ft steel arch and three more steel box-girder spans totaling about 330 ft to a concrete abutment at the top of the U. S. escarpment. The approach spans cross the existing Niagara Parkway on the Canadian side. In the U. S. the approach spans cross the proposed Niagara Parkway and the New York Central Railroad.

The main arch span will be of riveted construction. It will carry two 24-ft roadways separated by a 4-ft median and an 8-ft sidewalk on one side. The arch will have two box-girder ribs 13 ft 6 in. deep and 3 ft wide, spaced 61 ft c-c. Design of the ribs included an investigation of rib flexibility and was done with the aid of a digital computer. It will rest on steel grillages encased in concrete skewbacks founded on bedrock 150 ft above the river. The reinforced concrete deck will be carried above the arch ribs by unbraced steel columns. Asphaltic concrete will be used to surface the roadways.

Niagara Falls Bridge Commission financed the project by sale of bonds.

Three bridge contracts have been awarded. The Canadian substructure will be built by Steed & Evans Ltd., Maple, Ont. at a contract price of $286,620. Bates and Rogers will do the U. S. substructure under a low bid of $673,402. Bethlehem Steel Co. was awarded the contract for the superstructure at $5,584,921. The bridge is scheduled for completion in May 1962.

RPI Finds Bed and Board For Engineering Co-Eds

Russell Sage College, a girls' liberal arts school in Troy, N. Y., and nearby Rensselaer Polytechnic Institute will introduce a program geared toward attracting more women to engineering.

Under the plan, to be inaugurated next September, women will apply to RPI for admission, take all their academic studies there and board at Sage.

Though RPI has admitted women since 1945, there have been only 69 female graduates. In the past about 100 women each year have been denied admittance due to a lack of facilities.

United Building Industry Needed in Latin America

Main theme at the second Inter-American Construction Industry Congress held in Mexico City last week was the urgent need to band together a continental construction industry to help meet Latin America's social-political problems, which were outlined at the recent Bogota economic meeting of the Organization of American States.

Gonzalo Gout, head of Mexico's Chamber of Construction Industries and organizer of this meeting (the first such meeting was in Caracas in 1958), said, "We must not lose sight of the urgent need to promote private initiative in big housing programs and to stimulate banking institutions to invest long-term capital for financing popular housing. This type of construction has the double edge of social benefit so urgently needed in our countries, and also it is an inexhaustible new source of work for our contractors."

Apparently there's a push on to form a permanent inter-American federation of construction industries which would work closely with the political Organization of American States. The U. S. offered $500 million in aid to Latin America during the Bogota meeting.

Heading the U. S. delegation at the Mexico City meeting was James D. Marshall, executive director, Associated General Contractors of America.

Air Terminal Addition Announced for Next Year

Preliminary plans for an $8-million addition to the San Francisco International Airport have been unveiled by the city's Public Utilities Commission. Construction of the 320,000 sq ft addition should start next spring. Tentative completion date is set for early 1963.

The addition—known as the South Terminal—will add 14 gate positions to the terminal facilities for a total of 33 gates.

A master plan of the airport prepared last year by Welton Becket and Associates calls for a strip terminal building with 72 gate positions extending around three-quarters of a circle. The center of the circle will contain an 8,000-car capacity multiple-deck parking structure. The PUC hopes this parking section can be built by private investment no later than 1965.

A north terminal will be added later. Finger construction on the existing South and North terminals will provide additional gate positions as traffic increases.

Construction of the terminal should be complete in 1970. Passenger traffic is projected at 8.4 million by 1970; traffic this year is placed at 5.2 million.

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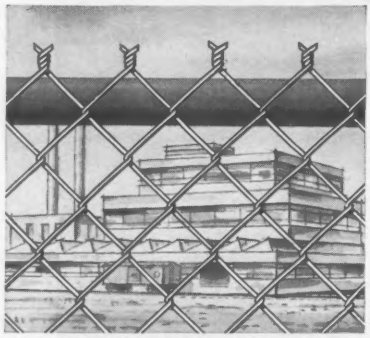

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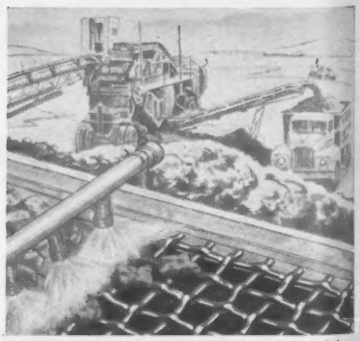

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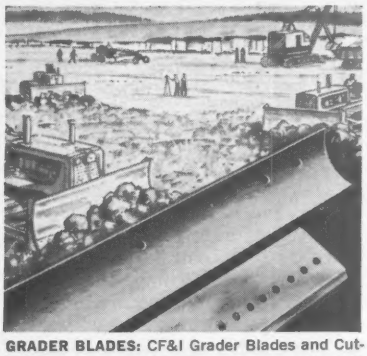

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Quiet Hotel in a Noisy Spot . . .

. . . Upstairs From Jet Terminal

How to design a comfortable hotel at the heart of a jet airport in a tropical climate—that was a problem facing the designers of the five-story, 274-room hotel built over the terminal building at Miami's new International Airport.

Guests at the hotel must be protected from the roar of jets, which, skimming only 100 ft overhead, bellow at a 120-decible level; and, away from the soothing beaches, they must be protected from temperatures that hover around 90 deg through a large part of the year.

Here's how Steward-Skinner Associates, Miami architects, and Mitchell & Gordon, Coral Gables engineering consultants, sealed the hotel building against noise:

• **Triple windows.** Outer windows are two layers of glass set at a 5-deg angle with the vertical and 9¼ in. from the inner, ¼-in. vertical plate glass. All three sheets are set in ⅛-in.-thick neoprene cushions.

• **Sealed and isolated walls.** Exterior concrete block walls are sealed with parging on both outside and inside faces to help make an impervious barrier. Inside walls are supported by metal studs isolated from the exterior walls by neoprene pads and C-shaped 20-gage metal clips. The shape and light gage of the clips—also used for the suspended ceilings in an S shape—serve to eliminate heavy vibration and higher pitch sound waves.

• **Double ceiling suspension.** Channel irons hang from the roof slabs on S-shaped metal clips. Plaster furring is suspended from a second series of clips on these channels.

The air conditioning helps by muffling objectionable outside noises with its own low and consistent hum. And, since it's a sealed building, the slight pressurization of the air conditioning acts as a sound deterrent.

The terminal's air conditioning works on a central-and-branch system. Seven centrifugal refrigerating machines send chilled water at 6,285 gpm from a central station to 112 fan-coil conditioners in service rooms spotted throughout the terminal.

Each equipment room houses three to five air-handling units. These contain a fan section, cooling coils, dampers and air chambers. At each unit 10% outside air is mixed with return air, which is filtered, cooled and dehumidified then circulated through low-velocity ducts at 1,000 fpm.

Object of the sectional apparatus rooms is to get optimum control at maximum economy. Instead of operating a complete, central plant continuously at peak load, the individual systems vary their output as cooling demand shifts and changes throughout the terminal.

A separate cooling system serves the hotel. Conditioned but uncooled air goes through high-velocity ducts with sound-absorbing cells to ceiling-mounted units in each hotel room. A 490-ton-capacity centrifugal water chiller serves the individual units. Air passes over a chilled water coil in a ceiling unit and into the room through a series of small jets. Air velocity drops and its travel noise disappears in a sound-deadening chamber in each control cabinet before release.

Room occupants dial their own weather by regulating the flow of chilled water through the unit's coil.

There are several advantages to this system. Since primary air supplied to the individual room units is fully conditioned, there's no need for a condensate drain line at each unit. And with no fans in the units, there are no motors to service and no electric circuit.

Throughout the terminal, conditioned air goes out through wall grilles or ceiling diffusers. The space between hung ceilings and floor or roof slabs serves as a return air plenum, eliminating return ducts.

Fred Howland Construction Co. was general contractor on the terminal project; Poole & Kent Co. were the mechanical contractors. Both are Miami firms.

Total cost of the air conditioning system, supplied by Carrier Corp., in the hotel and the terminal is about $2 million.

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. . . renew bridge decks with latex modified mortar

Here's how you can prepare and resurface structural concrete bridge decks in less time and at lower cost using portland cement mortar modified with Dow Latex 560.

Compare these savings. Conventional resurfacing methods require that you jackhammer out at least three to four inches of old concrete across the entire surface of the bridge and lay three to four inches of new concrete.

But when you're resurfacing with latex modified portland cement mortar, *only* the areas of actual failure need be jackhammered and sandblasted – and then only to a minimum depth of ½ inch, or to a depth sufficient to expose a sound concrete base. This thin layer of latex modified portland cement mortar has greater adhesion to substrate and produces a surface with greater flexural, tensile, compressive strength, greater resistance to water penetration, and higher freeze-thaw resistance than conventional concrete or asphalt resurfacing! It conforms to the expansion-contraction cycle of the original concrete, and reduces stress on the new surface.

Highway engineers, working with Dow research, have made field placements of latex modified mortar on bridges in Michigan, New York, Vermont, Texas, Ohio and several other states. For full information write for a technical report on how to apply latex modified portland cement mortar on structural concrete bridges and highways: THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1958LQ11-10. *See "The Dow Hour of Great Mysteries" on TV.*

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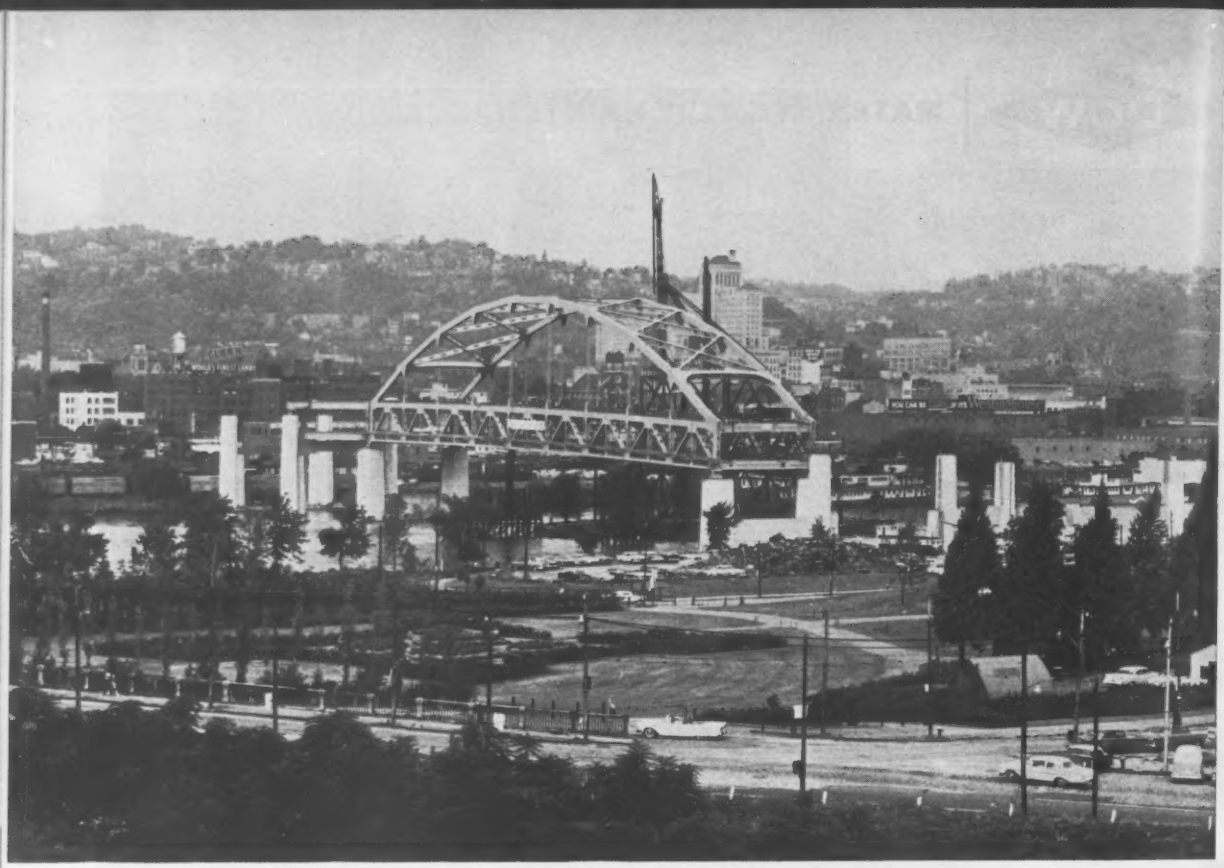


Pittsburgh's double-deck, tied-arch span waits patiently for approach roads.

Fort Duquesne Bridge Is Ready a

A new bridge has been added to Pittsburgh's riverfront skyline near the Point, where the Allegheny and Monongahela Rivers flow together to form the Ohio.

In only three months, from early May to August, a single floating derrick erected the entire superstructure of the 425-ft tied-arch span of the Fort Duquesne Bridge across the Allegheny. Key to the rapid progress was the preassembly of the deck trusses (the tie of the arch) into large erection sections —four panels 100 ft in length and weighing about 100 tons. A minimum number of falsework bents and cantilever erection were also contributing factors.

The speedy erection, somewhat paradoxically, was not demanded by a fast completion schedule. Due to controversies over the location of the approaches at one end and over the land for the approaches at the other, the new river span will be ready for service before approach construction ever begins.

The Fort Duquesne Bridge is only the second of its type ever built—that is, a tied arch that carries double-deck roadways, utilizes trusses for the tie members and has box section arch ribs. Its lone predecessor is the 750-ft-span Fort Pitt Bridge, only a few hundred yards away across the Monongahela River (ENR Nov. 19, 1959, p. 64).

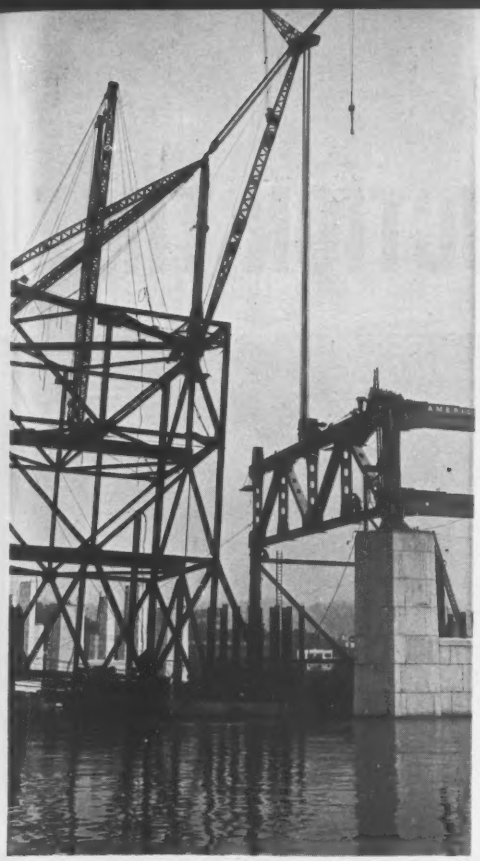
Both the Fort Pitt and the Fort Duquesne bridges were designed by Richardson, Gordon & Associates, consulting engineers, Pittsburgh, for the Pennsylvania Department of Highways, and both were fabricated and erected by the American Bridge Division of U. S. Steel Corp. But whereas the erection of the Fort Pitt tie trusses was carried out member by member and advanced from both ends toward the center, the similar Fort Duquesne job utilized preassembled truss sections, which were advanced from one end only.

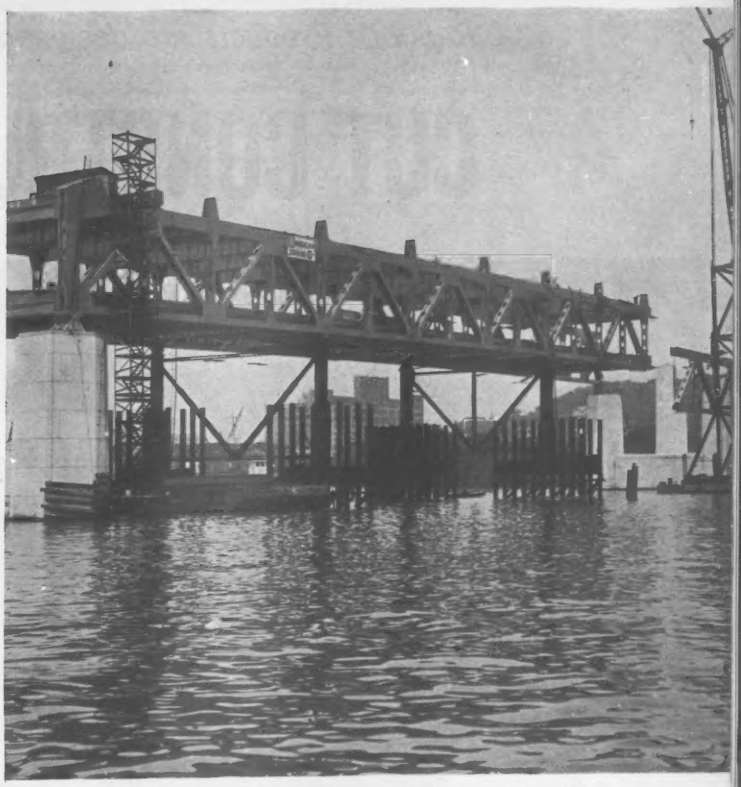
On both bridges the arch ribs were erected from both ends to closure at the center while supported on temporary columns resting on the tie trusses. But on the Fort Pitt Bridge, deck travelers set the arch ribs; on the Fort Duquesne Bridge, the floating derrick that erected the trusses also set the arch ribs and the sway bracing between. The same floating derrick, consisting of a steel tower supported on two barges and mounting a stiffleg derrick on top, was used on both bridges.

Fort Duquesne Bridge erection began by placing two steel falsework bents in the river 100 ft and 250 ft out from the pier where steel erection would begin. The first preassembled truss sections of four panels (100 ft) long were then set between the pier and the first falsework bent, and the floorbeams and stringers filled in. Two truss panels (50 ft) were next cantilevered, and another preassembled four-panel section was erected between this arm and the second falsework bent. From the second falsework bent it was possible to cantilever a four panel section, leaving a gap to the end pier to be filled in by a final four-panel truss section.

With the truss thus in place, the floating derrick was turned to erecting the arch ribs and the sway bracing, first from one end out 150 ft and then from the other end for the same distance. Temporary columns to support the ribs were used 50 and 150 ft out from either end.

To start arch erection, a rib section





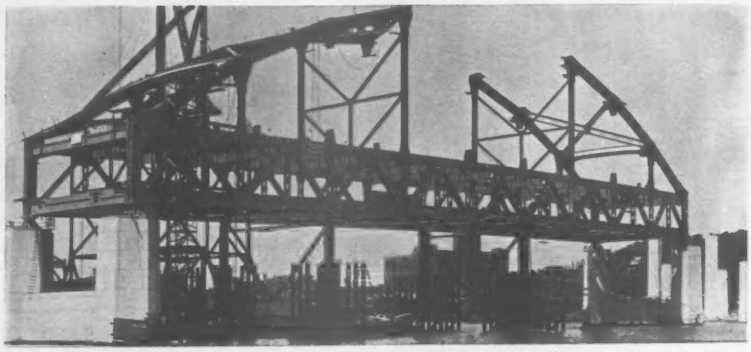
Floating derrick erected truss sections . . . . . . onto pile-supported falsework bents in midstream.

adyand Waiting

about 106 ft long was set on the first temporary column, cantilevering about 50 ft beyond it. Then a second rib section about 50 ft long was inserted between this cantilever and the next temporary column, followed by cantilevering a third 50 ft rib section.

When these operations were completed from each end of the bridge, a 47-ft opening remained at the center to complete closure. With the aid of jacks in the temporary columns, this opening was enlarged enough to permit inserting the closing rib section, after which the jacks were lowered until the connections could be made and the arch swung free.

The final operation was to install the suspender ropes by which the deck is carried from the arch. To make these rope connections, the deck trusses had to be raised. This was accomplished by manipulating jacks in the river falsework bents. Two 500-ton jacks in the falsework bent nearest the end of the bridge were brought into play to keep the dead load reaction constant while a pair of 1,250-ton jacks in the other falsework bent raised the truss as necessary.

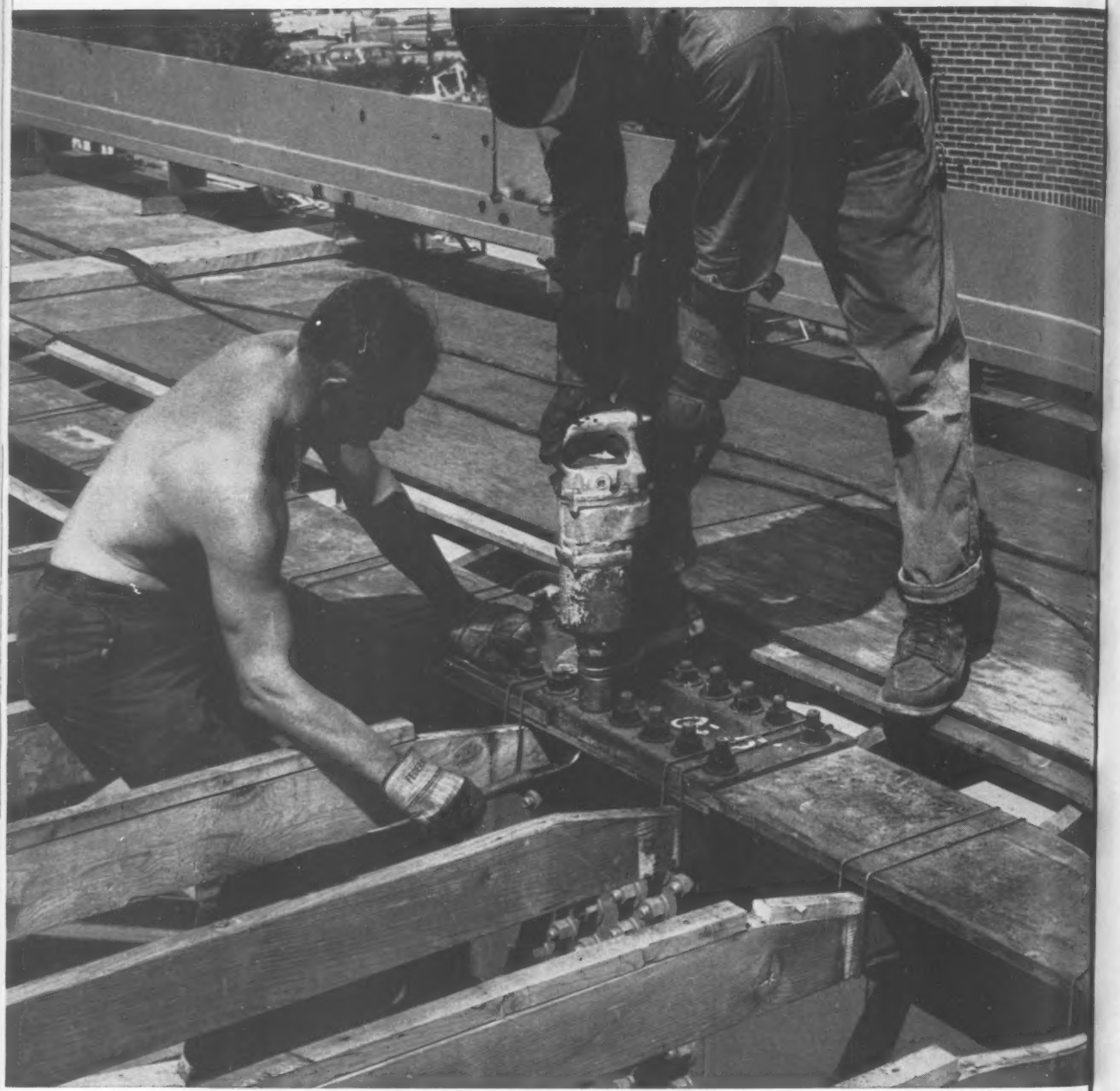


One third of the arch was built from either end . . .

. . . and the center third by cantilevering, inserting last member.

Republic Products are designed to

CUT CONSTRUCTION TIME



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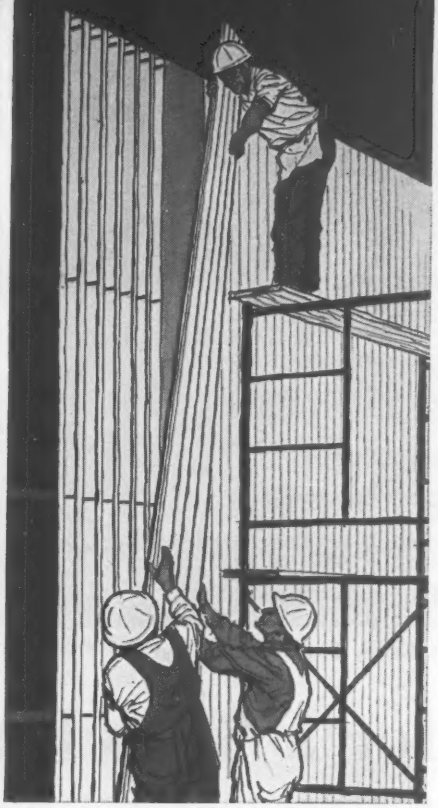

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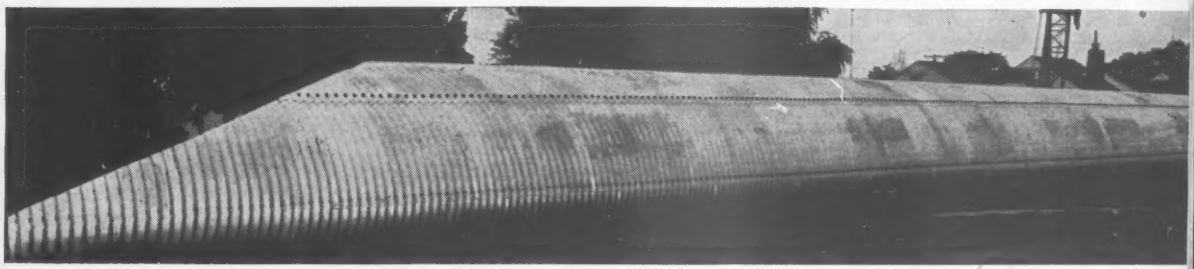

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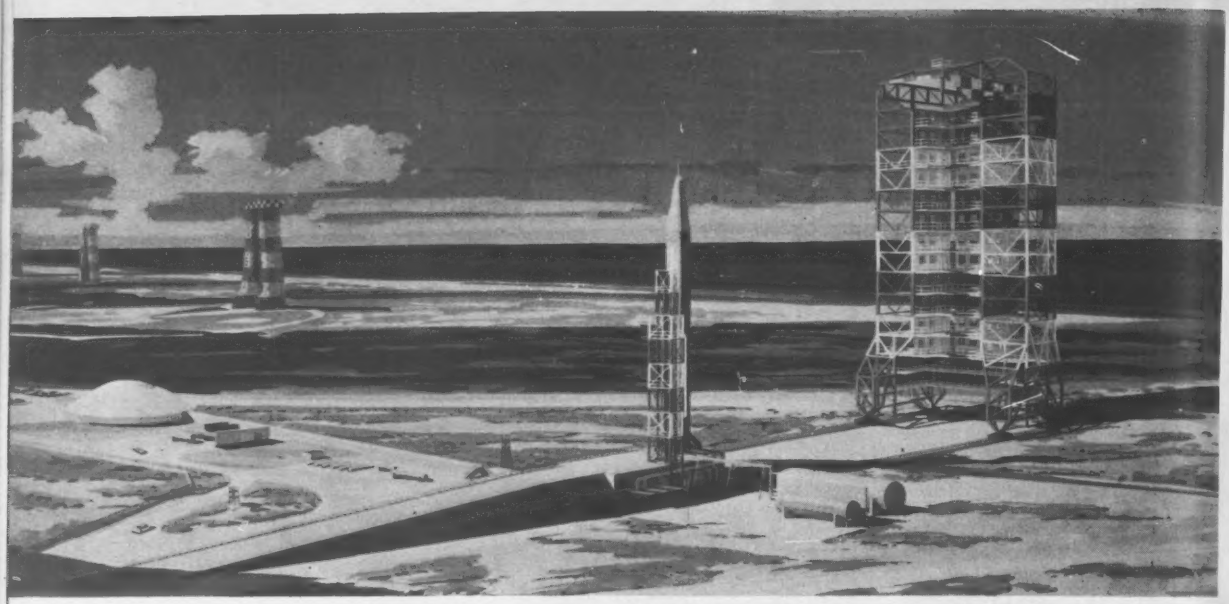


Missile service tower at Launch Complex 36 will dominate Cape Canaveral's skyline.

Take-Off Point for a Trip Into

By Maj. Warren Dailey and Anton Tedesko

The first launch complex designed exclusively for space vehicles will be completed at Cape Canaveral late this year. Known as Complex 36, the new launch facility will be the future "jumping-off" point for such space activities as man in space, soft landings of equipment on the moon, and orbiting a "stationary" satellite 22,000 miles from earth.

First planned use of Complex 36 is as the launching pad for Atlas-Centaur, the first U. S. vehicle capable of carrying multi-ton payloads.

The Atlas-Centaur configuration is composed of an Atlas first stage using RP-1, a highly refined kerosene, as fuel and liquid oxygen as oxidizer, and the Centaur second stage using liquid hydrogen as fuel and liquid oxygen as oxidizer. Designed by Convair-Astronautics of San Diego, Centaur is the first vehicle to use liquid hydrogen as a propellant.

Complex 36 was designed and built under the Air Force Ballistic Missile Division's concept of concurrency, in which all phases of a project go forward simultaneously instead of step by step. This meant that the Air Force and the designers, the Roberts and Schaefer Co., Inc., New York City, had to begin devising an installation in April, 1959, for a space vehicle that did not exist.

As a result, designs for the complex were revised repeatedly to meet changing requirements of the evolving Atlas-Centaur. The job has demanded tight scheduling and close coordination to have construction complete by the end of this year. Complex 36 will be the first launch stand of its size and complexity to be designed and built in less than 24 months.

Because of this complexity, Air Force Ballistic Missile Division decided to divide the project into three phases: (1) the launch operations building; (2) the launch and service building together with over-all site work; and (3) the missile service tower and the propellant loading system.

The launch operations building came first because the changing criteria of the missile itself had little effect on this building's structural makeup.

The launch operations building is dome-shaped and built to resist both blast and the impact of falling objects. It has 5-ft-thick reinforced concrete walls covered with a 7-ft layer of sand topped by a 4-in. coating of pneumatically placed concrete. The building is entered through two steel and concrete blast doors, each 2 ft thick.

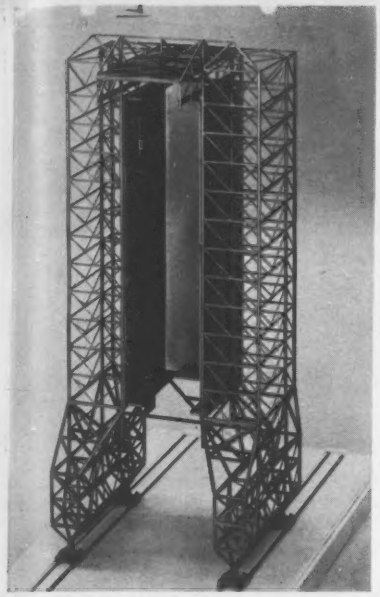
A heavy, cast-in-place concrete footing ring supports the dome. The contractors, Diversified Builders, Inc., Paramount, Calif., used two movable steel forms to place concrete for the dome. Each form handled a 60-deg sector. The dome was completed in two moves of the twin, opposing sectors and three concreting operations.

The launch and service building is a wedged-shaped structure, with a long, gently inclined ramp leading up to a service deck and launching pad 20 ft above the ground, where the missile is erected over a flame deflector opening.

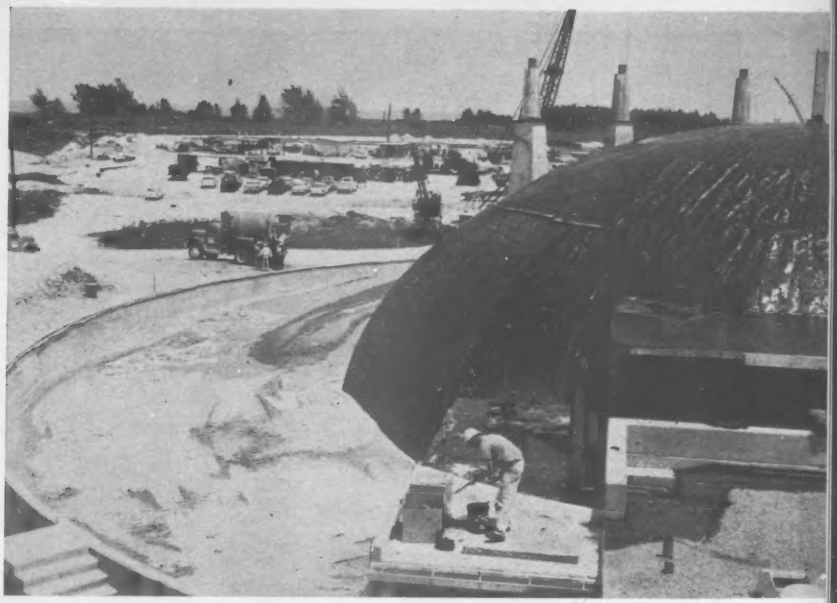
The ramp is an earth fill between two retaining walls. A concrete roadway tops the fill. When the ramp reaches a height of about 10 ft, the building beneath becomes a steel frame structure with a reinforced concrete footing and concrete block walls. Two stories of rooms are built under the higher part of the ramp to house shops, ground support equipment, electronics gear and instrumentation. Since the building will not be occupied during launchings, it is not designed to withstand blast.

When the Atlas-Centaur is launched, flames and exhaust will pass through an opening in the deck and strike a concrete-lined flame detector. The deflector will divert the gush of flame from a downward to a horizontal direction. The flames then strike a deflector wall that will direct them sideways away

***Major Dailey**, now assistant for technical validation to the commandant of the Air Force Ballistic Missile Division, was project manager for the design of Launch Complex 36. **Mr. Tedesko**, a vice president of the consulting firm of Roberts & Schaefer Co., Inc., directed the design of the launch complex project.*



Simplified service tower model.



Deep layer of sand will protect launch operations building.

ito Outer Space

from the building. The rocket blasts will erode the concrete lining on the deflector plate, but the lining will be rebuilt by pneumatic placement.

The Paul Smith Construction Co., Orlando, Fla., is prime contractor for the launch and service building. Ralph M. Parsons Co., Los Angeles, was consultant to R&S for the launch and service building and the propellant loading system.

The missile service tower is the dominating structural element of this missile launching complex. The 179-ft-high, 922-ton tower must provide a completely enclosed building around the missile, but be capable of moving away 336 ft under its own power.

R&S encountered two major design problems: They had to provide for the high winds to be expected in the Cape Canaveral area and they had to develop a means of moving the tower away from the missile against substantial winds.

In cross section, the tower is U-shaped. The missile is erected between the sides of the U. Retractable work platforms, built at 10-ft intervals, are then lowered so that the missile can be serviced from all sides. Fixed metal siding encloses the three inner sides.

Since the work platforms will extend a few inches of the missile, it was important that the tower be designed for a minimum of lateral deflection. Otherwise, movement of the platforms in a strong wind could damage the missile's thin (0.01 in.) skin.

This was solved by cantilever trusses tied together at each platform level. These trusses resist lateral loads parallel to the tracks on which the tower rides. In the transverse direction, the open end of the tower acts as a trussed portal frame. The other end wall is a deep cantilevered truss.

The tower's structural design was complicated because there is no available test data on a configuration like this. R&S had to use existing data for drag co-efficient and solidity factors based on wind tests for simpler trusses.

The second problem was solved by use of a four-wheeled truck at each corner to move the 922-ton tower on two sets of tracks 60 ft apart. Motor-driven pinion gears, mounted on short shafts within each truck, furnish motive power. Each pinion engages a rack located between the rails of the tracks. The drive is an electro-hydraulic unit capable of inching the tower along the track to achieve the precise alignment necessary for positioning it at the missile and also at its parked position.

Because of the uncertainty about the behavior of the site's saturated sand fill under heavy concentrated loads on spread footings, both the tracks and the launch pad itself rest on concrete pile caps supported by pre-stressed concrete friction piles driven 60 to 80 ft into the sand.

The trucks and power driving mechanisms are designed to move the tower against a wind of 48 mph. For protection against higher velocity winds the tower will be jacked up from the wheels and secured to the foundation at the end of the tower track with four 6-in.-dia pins at each truck. In this position, the tower can withstand winds up to 120 mph.

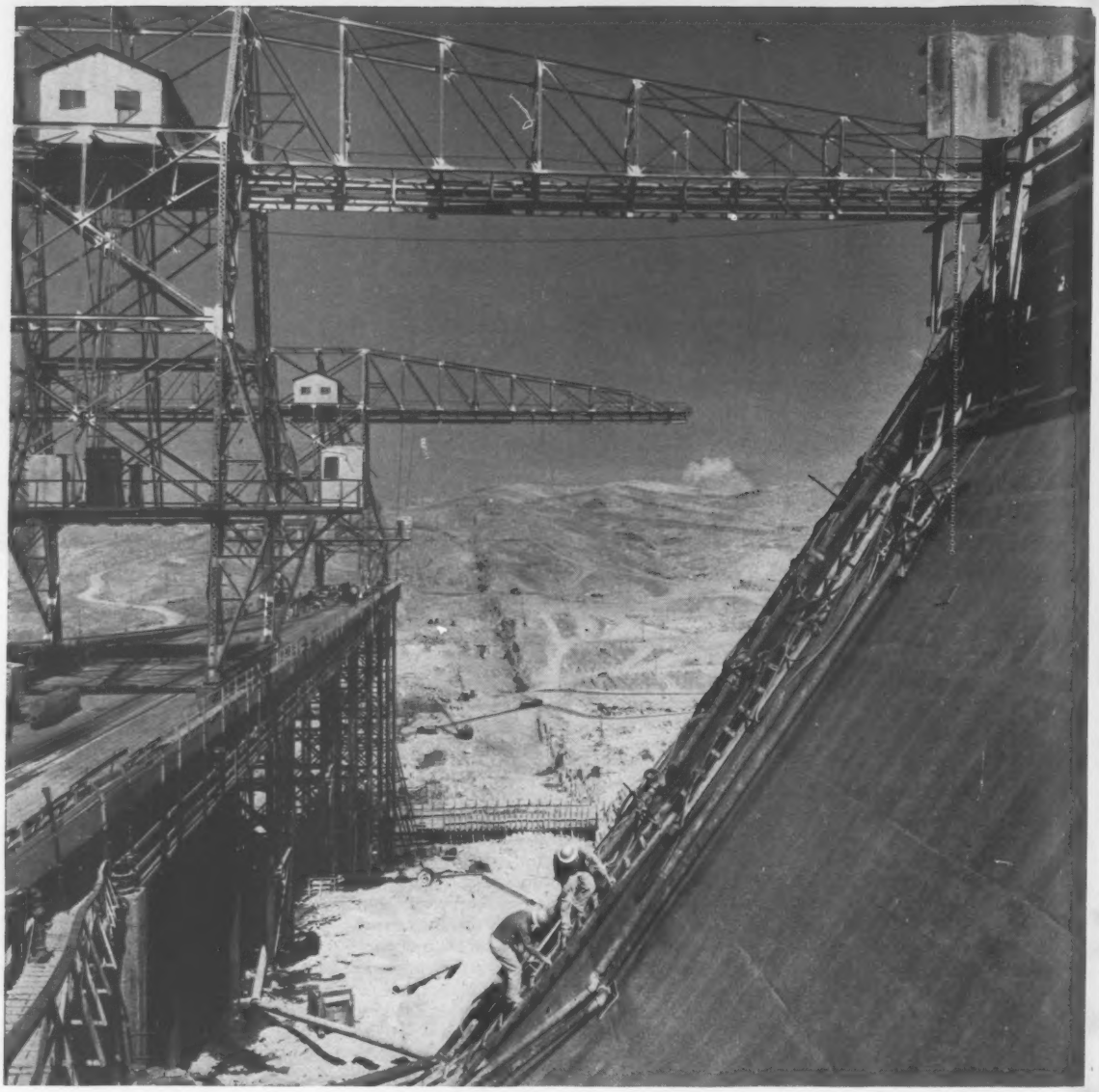
The service tower contains an elevator, which goes up to the 150-ft level, a 20-ton bridge crane at the top to lift equipment, and a 30-ton hoist at the 100-ft level to raise the missile. Since Complex 36 is a multi-purpose facility, capable of handling more than one kind of missile, the Air Force made allowance for longer missiles of the future by having R&S plan the tower so that its height can be increased from 179 to 209 ft.

The propellant loading system for Launch Complex 36 consists of elaborate equipment for storage, transfer and piping for liquid hydrogen, liquid oxygen, liquid nitrogen, RP-1 (a highly refined kerosene), gaseous nitrogen, gaseous helium and gaseous hydrogen.

Southern, Waldrip & Harvick of Long Beach, Calif., is constructing the service tower and loading system.

R&S men on the project were Raymond Wagner, project manager; James Michalos, structural consultant; David Billington, project engineer for the launch control center and service tower; and Robert Murrell, project engineer for the propellant loading system. Robert McMeen represented the Ralph M. Parsons Co., consultants to R&S.

Brig. Gen. William E. Leonhard, deputy commander for facilities of the AFBMD, Inglewood, Calif., directed the work aided by his deputy, Col. William D. Alexander, and John H. Lee, director of engineering. Ernesto Burciaga of the AFBMD civil engineering staff was project engineer. The Jacksonville District of the Corps of Engineers is supervising construction.



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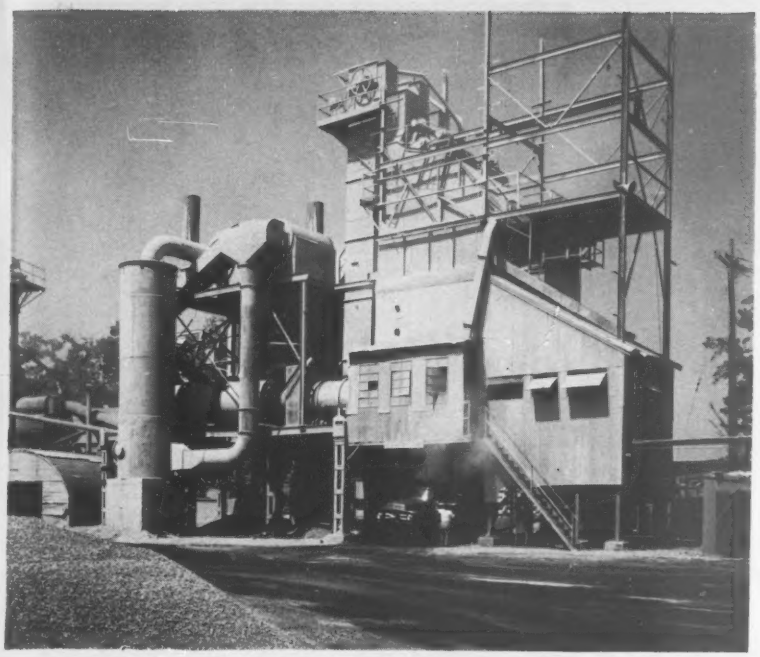

New Plant Turns Out Hot Mix . . .

. . . At the Touch of a Button

Massachusetts Broken Stone Co., Weston, Mass. has stepped up total production sharply by constructing a 6,000-lb batch hot-mix asphalt plant with automatic controls.

The company—a volume hot-mix producer—operates four plants, three of which are semi-automatic. The fourth, and newest, recently produced 3,000 tons of base mix in a ten-hour day, a local record.

Located on the outskirts of Boston, the firm supplies users within a 50-mile radius with crushed stone, concrete, and hot mix. All it has to import for the hot-mix operation is asphalt. Stone, quarried in its own backyard, is handled by a 400-ton capacity crushing plant that incorporates 10 crushers and 16 vibrating screens.

During the peak season, all four plants operate at full capacity. The three semi-automatic plants turn out the three most frequently requested mixes. The automatic plant has three mixes preset; switching from one to another can be done in a matter of seconds.

Dick Robinson, president of the firm, designed the plant, drawing his plans around Howe Batchmaster Controls. Final plans called for a two-elevator, two-drier plant with three-ton batch capacity. Paul Lloyd supervised construction, making use of structural steel from industrial plants being demolished in the area.

The automatic control panel has three rows of dials, each row controlling ingredients for a different formula. To set a formula, all the operator has to do is turn each of six dials in one row to the required amount of each ingredient —asphalt, ¾-in. stone, ⅜-in. stone ⅛-in. (rice) stone and sand. The sixth dial handles cement or lime when specified. If any of the ingredients is not needed for a particular batch, the operator turns a selector switch and that fraction is bypassed. He sets timers to control the mixing cycle.

To produce a three-ton batch of surface mix, the operator punches the start button and watches the batching process on a series of lights flashing across the control panel. The amount of sand that chutes into the weigh hopper is controlled up to the exact weight needed (the weight shows up on a tell-tale scale at the operator's right); then the exact amount of each size of stone, in order, drops into the hopper. When the total amount of dry mix is weighed out in the hopper, the batch automatically drops into the chamber of the pugmill mixer.

While the aggregates go through the dry-mix part of the cycle, asphalt is metered automatically, then sprayed into the mixer for the final wet-mix. Meanwhile, the automatic controls have started weighing another batch. Unless the operator intervenes by hitting the discharge "hold" button, the mixer dumps the batch automatically at the end of the cycle. The plant produces three-ton batches at intervals of less than one minute.

The operator can change from one formula to another by twisting a selector dial. To produce a partial batch, the operator sets the "partial batch selector" at the fraction of a total batch desired and punches the start button.

Unlike a lot of hot-mix plants, the automatic plant doesn't get a vacation. Massachusetts Broken Stone Co. stays open all winter to supply hot-mix and cold patch. While the total output during this part of the year doesn't amount to much, automatic features of the plant make it easy to turn out different formulas in small quantities.

WILL PERFORM FOR A CENTURY WITH A RIVER ON ITS BACK

At left, you see a length of cast iron pipe being installed under the Floyd River in Iowa. This is part of a water feeder main which will reinforce the existing water supply system.

Despite the severe conditions of a river overhead, the inherent ruggedness of cast iron pipe promises at least a century of trouble-free performance, and rarely requires repairs or replacement.

And cast iron pipe's cement lining assures a continued full flow of water year after year. It's no wonder that more than 90% of the pipe used for water supply systems in our 50 largest cities is cast iron pipe!

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THE MARK OF THE 100-YEAR PIPE

LETTER FROM HELSINKI:

Finland's first precast concrete bridge will be open a year from now.

Helsinki Building Plans Buck

TOWER CRANE on slip forms erects this grain silo.

By Lance Keyworth

If your landing at Helsinki airport is bumpy, Finns explain: "Our airport was built by drunken drivers."

That's not entirely true, but the penalty for failing to clear a blood test if you are caught driving after taking a couple of martinis is three to six months of rough work at the airport. The 300 prisoners employed there will be busy now—the second runway is being lengthened by 490 yd, to 2,470 yd and the main runway will then be extended to 2,855 yd.

In a country that had to resettle nearly half a million evacuees (out of a total population of about 4 million) after World War II from territories ceded to the Soviet Union, and that is now coping with a population bulge, airports are the least of the construction problems.

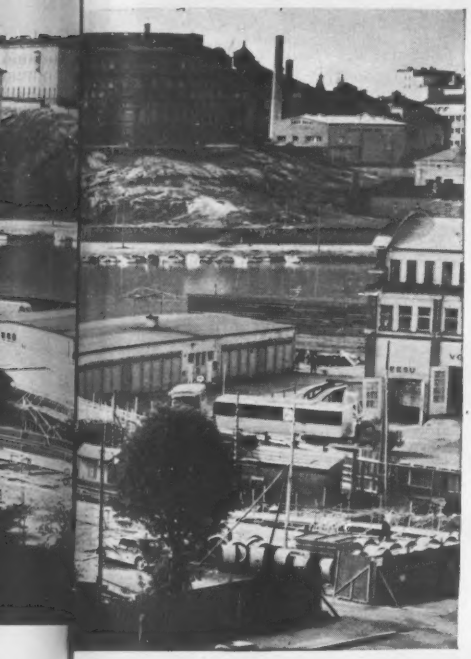
The population of Helsinki was 319,940 in 1940, 385,000 in 1950 and will be an estimated 580,000 in 10 years. Space is precious in the center, where the solid old buildings are being ripped down. The tall new office blocks replacing them are making air expensive, too.

Another extra cost is civil defense: By law, every new house with a volume of 106,000 cu ft or more must have its own air raid shelter. The expanding population is being housed in ten satellite townlets, self-contained with schools, recreational facilities and shopping centers. The entire center of the city is being replanned by architect Alvar Aalto.

Apart from financing, always a problem in this capital-hungry country, Helsinki poses special problems for the construction engineer and town planner. Part of it is built on swamp, part on granite, part on soft silt. With three parts surrounded by sea Helsinki can only expand inland.

Building in winter in sub-zero temperatures for weeks complicates con-

Lance Keyworth, McGraw-Hill World News correspondent in Helsinki, has been covering business and technical news in Finland for five years as a free lance journalist.



Puotila is one of the new ultra-modern housing developments.

Winter and the Sea

creting and other work phases. But there is plenty of timber for scaffolding and the Finns use it liberally.

One of Helsinki's busiest construction engineers, in charge of the work at the new satellite townlet of Puotila, is dismayed by none of these problems. Kauke Rastas, an evacuee himself, knows what it is like to wait for a home. On January 2 his workmen moved onto the old farm estate of Puotila, nine milesfrom the city center. His job: to have 300 apartments plus shops ready by the year's end (there will be ultimately be 700). The temperature was then -4 deg. On Sept. 17, furniture vans drove up to the first completed house and disgorged the belongings of eight families.

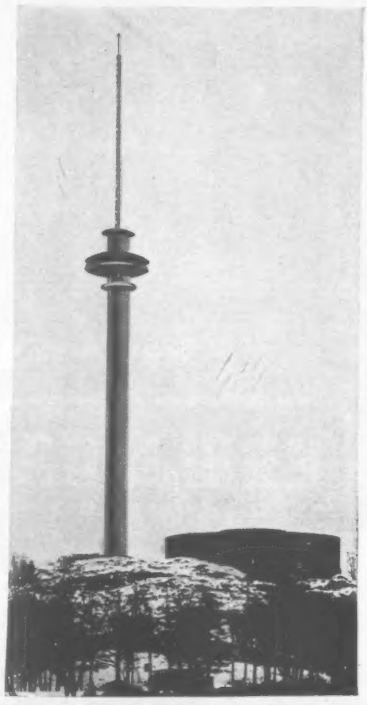
One more house will be completed every two weeks. Mr. Rastas reckons this is average for present-day Helsinki construction work: "As soon as they have enough money they say go. They don't think, just want the place ready." He is using moulded smooth concrete mixed centrally in turbo concrete mixers and distributed around the estate by tractor. No mortar is used. Paint is applied directly to the concrete surface.

Mr. Rastas's company Yrö Karjalainen Inc., is one of the biggest construction firms in Helsinki. The contracts for big jobs, like Puotila, are awarded by competitive tender. The money in this case comes from the Housing Savers Registered Society, consisting of members who have opened special savings accounts for their future homes. The state helps out with long-term, low-interest loans, and any balance needed to start comes from the banks.

The average apartment here, 750 sq ft, costs $9,375, including refrigerator, built-in cupboards, etc.

Another lovely townlet is Tapiola, carved out of the surrounding forest six miles the other side of Helsinki. Some of Finland's finest architects have designed the houses there, and the plan forsees a maximum density of 26 to 30 persons per acre. It will be finally completed in 1962.

(*Continued on p. 46*)



TV TOWER will dominate city's skyline. On top—a restaurant.

Helsinki City, which has spent about $34 million on housing in the past ten years, now does no building itself, with one exception. Although there are no slums in the town, there are some 300 old wooden houses and poorly developed sites. These are being cleared and the tenants are being placed in new low-rent apartment blocks built by the town. One thousand dwelling units will be ready for this purpose next year.

Helsinki has 1,000 working sites, many of them large factories. Most of them are on the outskirts, unobtrusive. Others are moving to the outskirts, where space is plentiful and land is cheap.

An example is Frazer's Bakery and Candy Factory, moving out in stages. As each wing of the new building is completed a new department moves out. The factory has only two floors, no elevators. Raw material is trucked into the upper floor directly from the road.

Finnish engineers found an ingenious building solution for the new grain silo of the Vaasan Höyrymylly Milling Corp. in Helsinki West Harbour. Using the slip form method, a Linden tower crane was attached to the sliding forms. It was brought up on a special "sled" supported by the day-old poured concrete. The rate of lift was 11.5 ft a day. It now sits atop the 197-ft structure and is being used for its original purpose of lifting and delivering the building material for the mill alongside.

For months now, miles of Helsinki streets have been ripped up and relaid, to the intense annoyance of motorists and pedestrians alike. The reason: laying pipes for two huge distance-heating projects. One-eighth of the city is or soon will be heated from two power stations.

With Helsinki expanding at the rate of about 7,000 persons and 24,200 motor vehicles a year, traffic and the water supply are becoming real problems.

The three main arteries out of the town have been planned, and work is going on 'round the clock on the western one, leading to Turku, the former capital. This four-lane highway will have no intersections, crosses 12 bridges in the first eight miles, runs through rock hills in places, over soft silt in others. It is costing roughly $1.6 million per mile.

Since part of Helsinki has sprawled out into the nearest islands of the archipelago, it has a lot of bridges, three of them corking up the main outlets at rush hours. One has already been replaced with a new six-lane bridge; a second new bridge is under construction at another bottleneck, and work will begin on the third in a year or so.

Sörnäinen Bridge will be ready in November, 1961. It is the first big bridge (820 ft long, 75 ft wide) to be built in Finland by the prestressed concrete method with a Dywidag system. The designers, who will also handle the third bridge, are A. Betoni Inc. The cost of Sörnäinen Bridge will be about $1,400,000.

Helsinki gets all its water today from the River Vanta. But in five years the fast-growing town will be thirsty, or at least dirty, if this source of water is not supplemented. The waterworks engineers have now decided to go about 25 miles to Lake Hiidenvesi, for more water.

There, a wooden pipe will be led into the lake and water will be pumped about 82 ft uphill to a tunnel. This tunnel, 64 ft sq, has to be driven for 6.8 miles under the rock, at depths 131 to 195 ft below the ground surface. From this tunnel the water will flow by gravity through natural streams to a reservoir that is being constructed near the water purification plant on the edge of Helsinki. This big project is going to cost the taxpayers something like $3 million.

The man who comes back to Helsinki in 10 years time, say the town planners and engineers, will not know the city.

The railway shunting yard is being shifted, also the bus terminus. Both are now in the center, a luxury that can no longer be afforded.

On one of the highest points there will be a TV tower, which will be no dwarf even beside the Eiffel Tower. It will have a restaurant 659 ft up.

Perhaps there will be an underground railway by then—test borings have already been made. The huge new central hospital with its own power station will have been completed. At a rough estimate, Helsinki is probably now spending—public and private investment together—about $62.5 million a year on construction, and there are no signs of let up.

The problem is to raise long-term loans for big projects. So far there has been too much financing with tax income.

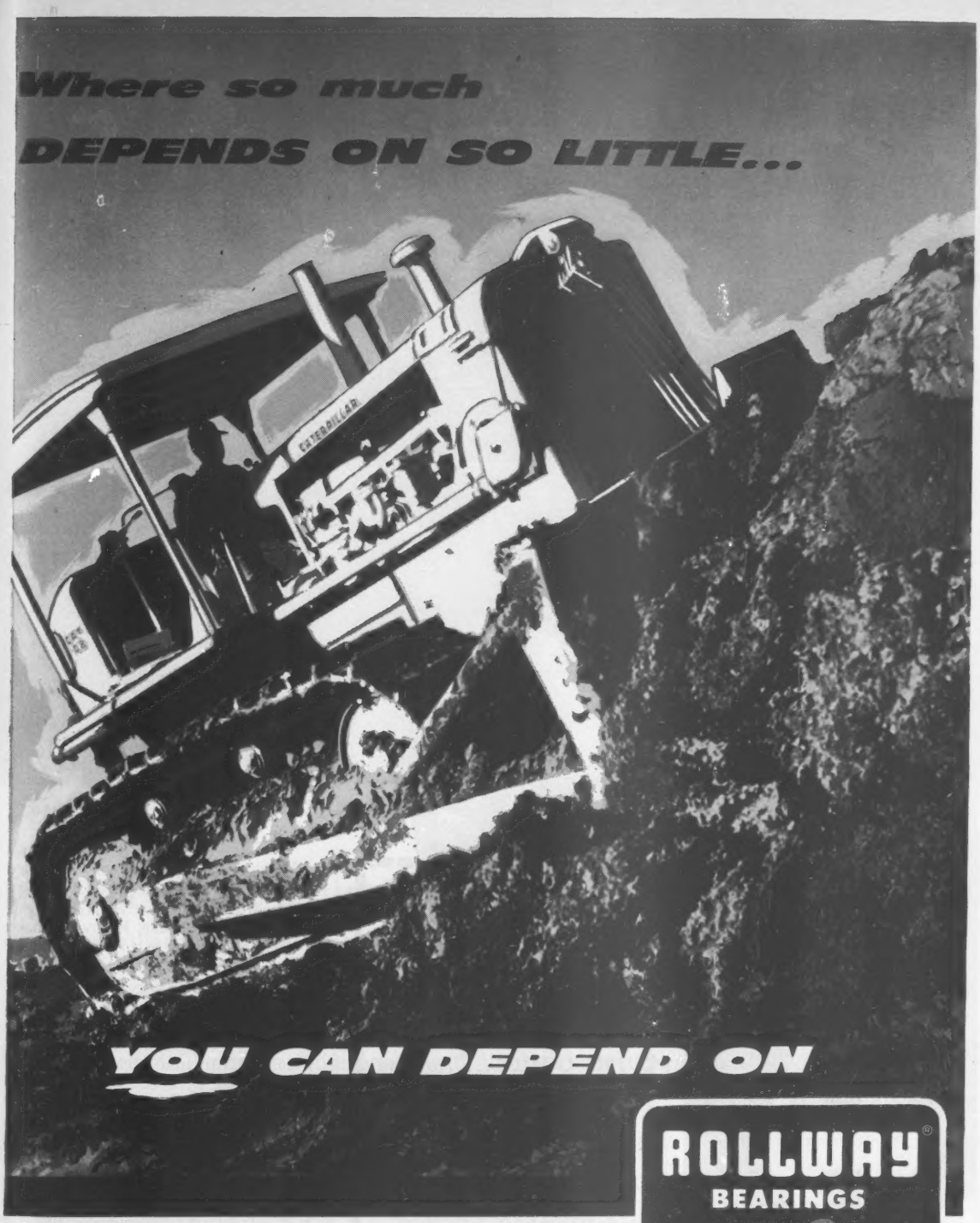
In January, 1958, the per capita debt of Stockholm, Sweden, was $411.6. For Helsinki it was $32, which must be one of the smallest in the world for a capital city.

New Bridge Over the Peace River

Traffic is now moving across this new $6-million bridge over the Peace River on the Alaska Highway 34 miles north of Dawson Creek, B. C. The 2,237-ft structure replaces a suspension bridge that was pushed into the river by a mud slide (ENR Oct. 24, 1957, p. 26).

The bridge is a deck cantilever with three main spans. The center span is 120 ft above the river. It carries a 26-ft roadway with a 5-ft sidewalk on each side, plus a twin pipeline to be used in event of failure of a nearby suspension-bridge pipeline.

Consulting engineers for the project were A. B. Sanderson and Co. of Victoria and Vancouver, B. C., and Stanley, Grimble and Roblin of Edmonton. Piers and approaches were built by V and M Construction Co. of Vancouver, with structural steel by Dominion Bridge Co.



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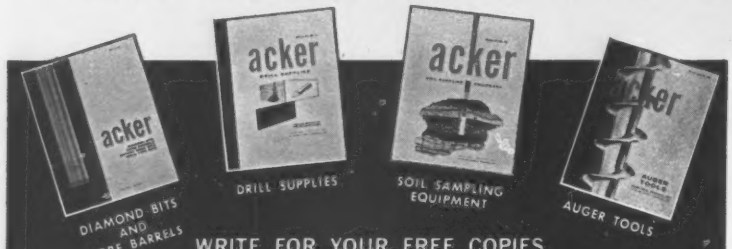

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South America's Tallest Steel-framed Building

South America's tallest steel-framed building is the newly completed 34-story Edifico Avenida Central, going up on Rio de Janeiro's main commercial avenue.

The $9-million office building has a total 753,000 sq ft of floor space. Henrique Mindlin is the architect; Capua e Capua, S. A. are the builders of the new structure.

39-Bridge Job Will Close Last Inter-American Gap

Work is under way on a bridge construction contract in Costa Rica that will close the last impassable gap in the Inter-American Highway, make it possible to drive at any time of year the entire length of the route from U. S. to Panama City.

Let by Costa Rica with U. S. concurrence, the contract covers construction of 39 bridges of reinforced concrete and structural steel over a 133-mile stretch between San Isidro del General, Costa Rica, and the Panama border.

The $4.7-million contract is held by a joint venture consisting of the firm of Empresa Constructora Rafael Herrera Ltd., of Costa Rica, and Louis R. Sommer, a U. S. citizen in Panama.

Since 1930 the U. S. has been assisting the six Central American republics in building the highway by paying two-thirds of costs. The Inter-American Highway is part of the Pan-American Highway system, which will connect the capitals of Central and South America with the U. S. highway system.

Meet an expert in light construction—There's no finer example of light construction than this familiar orb web spun by a common garden spider. The spokes and spirals are whisper-light, but stronger than steel wire of the same diameter. The spider has an economical advantage; he makes his own building material, and nobody knows exactly how to duplicate it. ☐ For strength, lightness and economy with the best structural material man can devise, we suggest USS AmBridge Steel Joists, both standard and longspan, for light occupancy structures. They provide strong, lightweight and economical construction suitable for any type of roof, ceiling or floor. AmBridge Joists have an underslung, open-web design for maximum headroom, and to accommodate pipe, ducts and conduit in all directions. AmBridge Steel Joists are easy to install. And once in place, they make a safe working platform. Want more information? Write to our Pittsburgh Office for your free copy of a 40-page catalog.

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American Bridge Division of United States Steel

USS

LOOK WHAT THEY'RE DOING WITH DEEP STRENGTH ASPHALT PAVEMENTS IN WESTERN KANSAS!

To withstand heavy traffic,
sizzling heat, numbing cold...

11-inch sand-Asphalt base is chosen for Kansas Interstate 70

Traffic will soon be rolling on a new DEEP STRENGTH Asphalt pavement section of Interstate 70 in Trego County, Western Kansas. In this part of the country, temperatures range from a numbing 20 below zero in winter, to sizzling 115°F in summer; winds sometimes reach hurricane force.

To meet the demands of expected heavy traffic and extreme weather, Kansas Highway Commission Engineers chose DEEP STRENGTH Asphalt pavement. Notice construction and cross-section (below). See how precepts of the new DEEP STRENGTH Asphalt design are incorporated . . . heavy-duty, **full width** Asphalt Concrete surface . . . **11-inch heavy-duty, sand-Asphalt base** . . . heavy compaction . . . good drainage. Here is strength and durability!

Minimum Maintenance

When built like this—for DEEP STRENGTH—Kansas experience has shown that Asphalt pavement will carry the heaviest traffic loads *without* distress and *with minimum maintenance.*

Make Best Use of Road-building Dollars

Like many other states, Kansas is finding that when Interstate highways are built with Advanced Design DEEP STRENGTH Asphalt pavements, the best use is made of road-building funds. For the **Advanced Design Criteria** for Asphalt pavements often save money over the cost of Asphalt pavement designed to other standards. The reason is the **Advanced Design Criteria** permit inexpensive Asphalt base to be substituted, within limits, for more expensive Asphalt concrete surfacing, and allow reduction in total structure thickness when used in place of untreated base.

No De-icing Damage

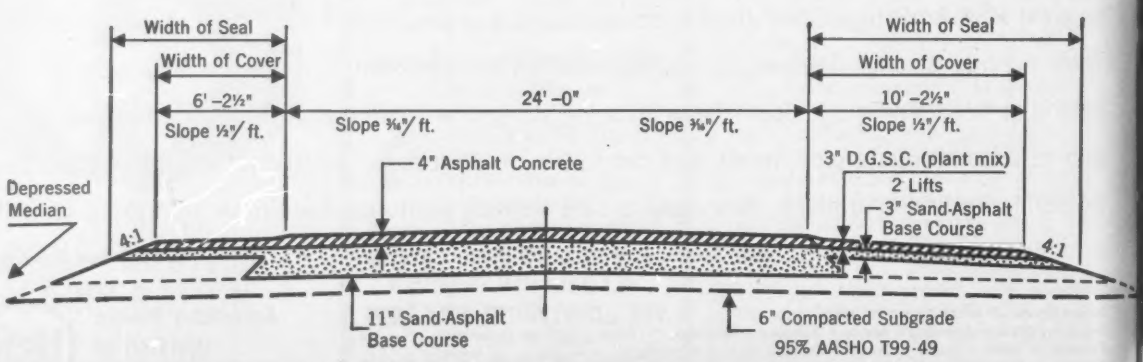
In addition, important savings in maintenance result when roads and bridge decks are Asphalt surfaced. Asphalt pavement does not deteriorate from de-icing salts. That's one reason why Maryland and Massachusetts are using Asphalt surface for all new bridge decks.

AND SAFER—snow and ice melt faster—higher skid resistance.

THE ASPHALT INSTITUTE

ASPHALT INSTITUTE BUILDING, COLLEGE PARK, MARYLAND

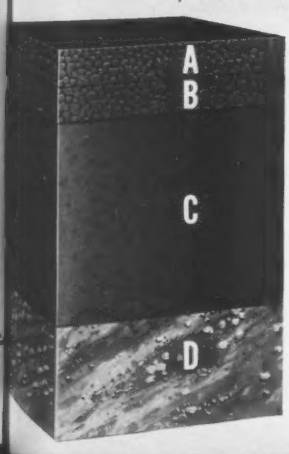
TYPICAL PAVING SECTION



Subgrade was compacted and fine graded before road-mixing of sand-Asphalt base.

Local sand shaped in windrow, bladed to reduce moisture to less than 1%, reshaped into windrow, mixed with Asphalt through traveling mixer—aerated and compacted.

Supporting courses are compacted with high contact pressure pneumatic roller to assure smoother riding under all traffic weights to come. Contractor's equipment was permitted on base course during construction of successive layers, which assisted in obtaining maximum density and reducing haul costs.



THIS IS DEEP STRENGTH CONSTRUCTION

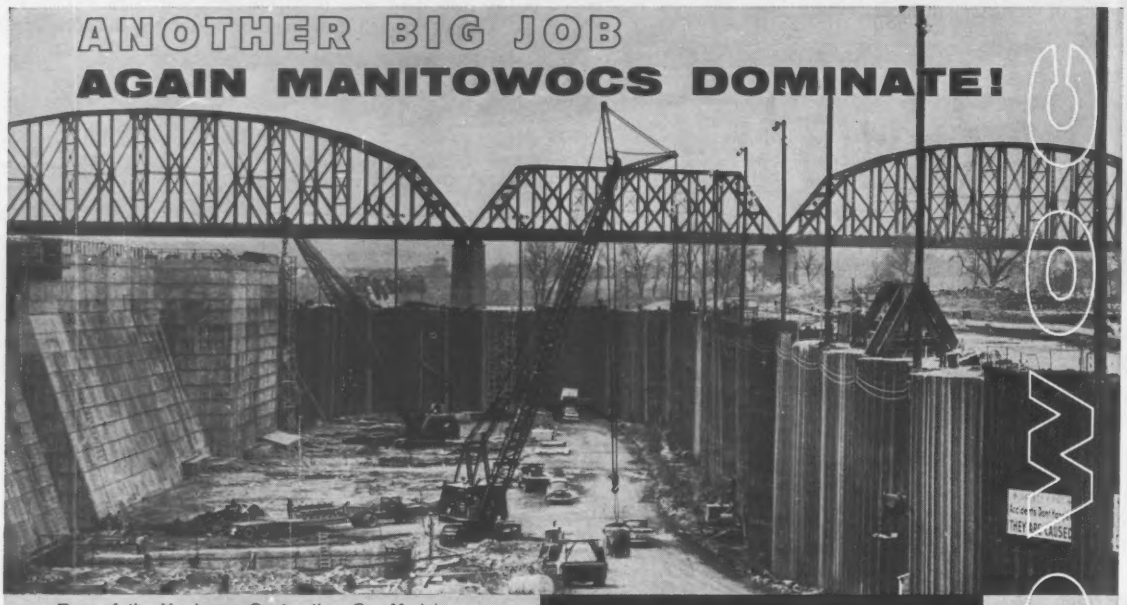
A
2-inch surface course

B
2-inch binder course

C
11-inch
sand-Asphalt base

D
Subgrade

ANOTHER BIG JOB
AGAIN MANITOWOCS DOMINATE!



Two of the Hardaway Contracting Co. Model 3900 cranes at the Kentucky lock and dam site.

In Louisville, Ky. work has been progressing for over two years on reconstruction of Lock No. 41, just one phase of a billion dollar, long range Ohio River navigation and improvement program. Initial efforts on the complicated, $19,300,000 Louisville job include the construction of four huge cofferdams.

General contractor is the Hardaway Contracting Co., Columbus, Ga. under supervision of the Louisville District, U. S. Corps. of Engineers. The Hardaway Company has been using two Manitowoc Model 3900 cranes exclusively for the cofferdam construction, handling 13 ton templates and the 60 ft. steel sheet piling to form the coffer cells. The cranes also have been placing concrete for both guard and lock walls. An estimated 375,000 yds. of concrete will have been placed before the job is completed.

On another phase of the Louisville project, Traylor Bros., Inc., Evansville, Ind. has been using a Manitowoc Model 4500 Vicon dragline, equipped with a 147 ft. boom and a 5 yd. bucket, for widening and deepening a mile and a half of the upstream approach channel. The drag moves approximately 375 yds. of mud and rock per hour, widening the channel from 200 to 500 ft. An estimated 3,500,000 yds. of earth and 200,000 yds. of rock will have been removed when the job is finished in late winter of 1961.

Manitowoc 4500 Vicon dragline dredges 375 yds. of mud and rock per hour.

Commenting on the performance of the Vicon dragline, Mr. Ford Dyer, Project Manager for Traylor Bros., Inc., said, "We find that the Manitowoc maneuvers better than any other machine of comparable size and that it works 10 to 12 per cent faster." In addition to the dragline, Traylor Brothers have used two Model 3900 Manitowoc cranes at the job site.

On multi-million dollar jobs like this or everyday "bread and butter" jobs, Manitowocs are consistently the choice of contractors needing big output at the lowest possible cost. Be sure to call *your* Manitowoc distributor when you are ready to improve your equipment fleet.

MANITOWOC

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Manitowoc

MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)
Manitowoc, Wisconsin

SHOVELS	CRANES	DRAGLINES	TRENCH HOES
1¼ to 6 YDS.	25 to 125 TONS	1¼ to 7 YDS.	1¼ to 3 YDS.

Calcium Bentonite Slurry Seals Canals

Substantial savings of water and money may result from the report that low-swell (calcium) bentonites, which are plentiful in Colorado, are suitable for sealing irrigation canals and farm reservoirs.

The report was made by the Colorado State University Research Foundation which for seven years has been working on finding low-cost methods of sealing canals and controlling canal seepage problems where conventional linings of concrete, asphalt or compacted earth are too expensive. CSU has investigated the use of bentonite for sealing purposes, sealing farm ponds and reservoirs with the material.

Bentonite is a natural clay substance, usually the mineral montmorillonite, common in many sections of the West. It is often formed by the chemical alteration or decomposition of glassy igneous material like volcanic ash.

Until recently, CSU has studied the high-swell (sodium) bentonites mined mainly in Wyoming, South Dakota and Montana. These are used in drilling oil wells and in foundry sands.

Limited experience, however, has shown that the Colorado bentonites show several advantages over the high-swell Wyoming variety. Evaluations of bentonite treatment in Wyoming and Colorado place the cost of Colorado bentonites between $7 and $20 a ton delivered and installed at the site. This compares with a minimum of $40 a ton for Wyoming high-swell bentonites.

The low-swell bentonite appears easier to mix. Indications are that it can be used in a low-cost pit run condition. Wyoming bentonite, commonly used in past sedimenting work, on the other hand, has been a milled product that is dried, ground and distributed in paper bags. In recent work with low-swell bentonite, no special mixing equipment was required. High-swell bentonite requires a jet mixer for best results. Low-swell bentonites are more stable than the high-swell variety in the presence of hard water.

The report describes one successful bentonite installation made by the Twin Lakes Reservoir and Canal Co. in the Connection Canal near Aspen, Colo. A 7,800-ft-long canal, the Connection runs through a very rocky bend in fractured granite with loose talus. Its capacity is 350 fps. The canal was losing all flows under 10 fps, and now loses less than 1 fps.

DAMS ALONG CANAL are built with mixture of bentonite and coarse materials, areas of high seepage are blanketed with the mixture.

WORKMAN BREAKS DAM as flow overtops it and the resulting lumpy slurry plugs holes. Procedure is followed from dam to dam.

The bentonite was placed by the multiple-dam method. This involved a series of small dams made up of one-third Colorado low-swell bentonite, one-third Wyoming high-swell bentonite and one-third wet sawdust. After the water collected behind a dam and began overflowing, ditch workers with shovels helped churn the mixture that was dispersed by the flowing waters and allowed the resulting lumpy slurry to plug holes in the canal.

Cost of the installation, which used 242 tons of bentonite, was about 35 cents per square foot of wetted area.

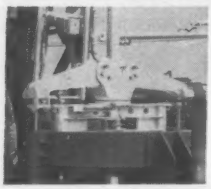
A series of brochures on the use of bentonite for sealing purposes is available from Project Leader, Canal Sealing Investigations, Colorado State University, Research Foundation, Fort Collins, Colo. The brochures are: "Sealing Farm Ponds and Reservoirs with Bentonite," "Mixing Bentonite for Sealing Purposes," "Sealing Rocky Ditches with the Bentonite Multiple-Dam Method," and "Testing Bentonite for Sealing Purposes."

The university group proposes further studies of Colorado bentonites to encourage their use for sealing canals and reservoirs; to assist Colorado irrigation districts in evaluating canal and reservoir seepage problems; and to assist contractors in training personnel in the use of equipment for sealing canals and reservoirs with bentonites.

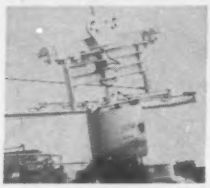
New crawler mounted Calweld Drills offer more!

More features... More digging power... More speed!

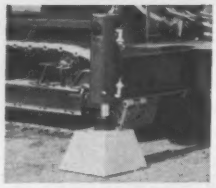
Check the features...



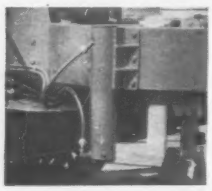
Hydraulic down pressure (50,000 lbs.) for faster digging in hard substrata.



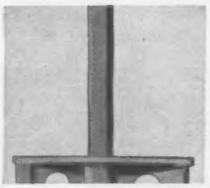
Hydraulic dumping arm for faster, safer dumping.



Hydraulic operated outriggers (box type).



50-ton capacity for pulling casings using hoist and crowder hydraulic rams.



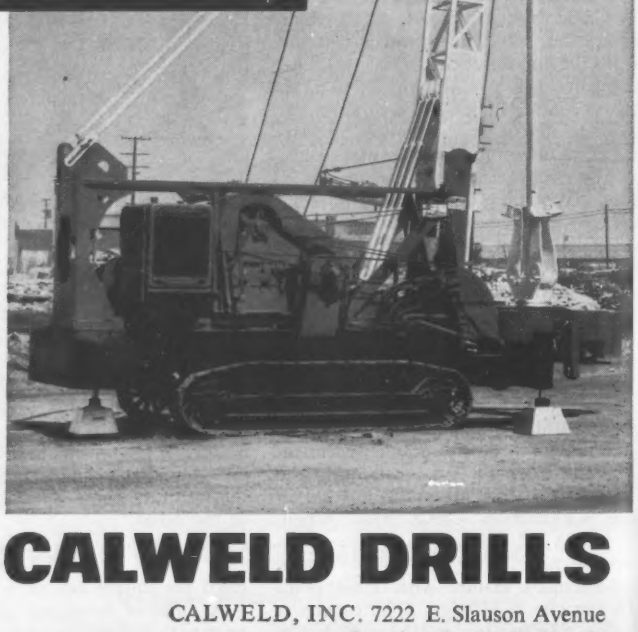
Triple telescoping kelly bar for drilling to 90 foot depth.

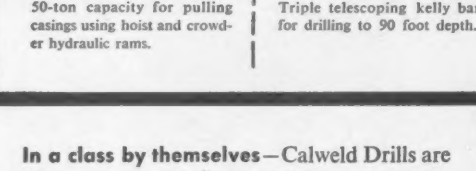
Special bucket drills: rock grab, coring bucket, tungsten carbide rock drill and others.

In a class by themselves—Calweld Drills are BIG and do a *big* job—drill any size hole from 10 inches to 10 feet in diameter and 200 feet deep.

It's the contractor's drilling rig—because a Calweld does so many jobs—digs caisson pier holes, digs belled footings, pre-bores concrete piles, drills dry wells. Excellent for subsoil sampling and exploration.

Write for 16-page illustrated Methods Manual for job facts and figures.

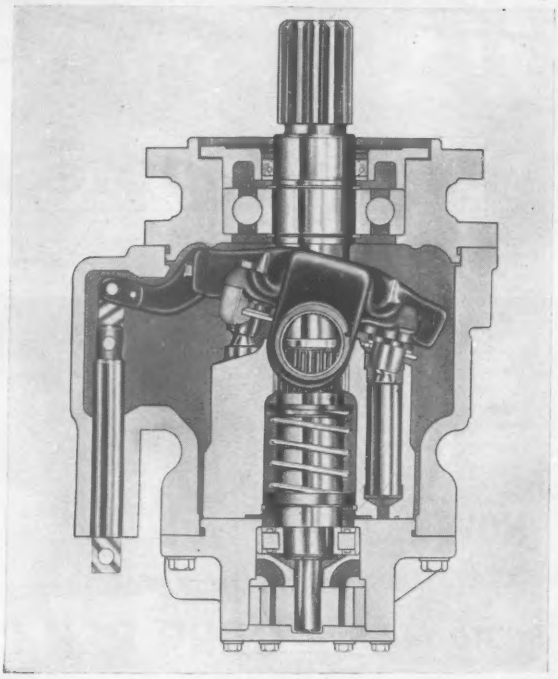




CALWELD DRILLS

CALWELD, INC. 7222 E. Slauson Avenue
Los Angeles 22, California

Truck idles up 15% grade with 3,500 lb load. Key is...



hydrostatic drive actuated by an axial piston pump.

Test Lift Truck Uses Hydrostatic Drive

The development of hydrostatic drives for materials handling and construction equipment is gaining impetus under the combined efforts of four major equipment manufacturers and the New York Air Brake Co.

Design details and manufacturing processes are well developed and considerable experience has been gained through field testing of prototypes for several applications.

Yale & Towne, the only manufacturer ready to acknowledge participation in the work, is testing hydrostatic drives in hard-tired lift trucks. Three other companies are testing the drives in tractors, ready-mix concrete trucks, and for the steering of scrapers.

A hydrostatic drive is a device that transfers energy—or torque—by means of a positive displacement pump and a hydraulic motor connected by high pressure hydraulic lines.

This definition leaves room for numerous combinations and variations in drive set-ups, and they exist. New York Air Brake has at least six possible combinations of units for its "Dynapower" hydrostatic drives. Included in its line are one or more variable displacement pumps that are connected to one or more hydraulic motors which can be either of fixed or variable displacement and may be connected in series, parallel, or tandem.

The idea of hydrostatic drive is not new. It has been worked on and experimented with, principally in Europe, for more than 30 years. It has been used commercially on ships and with heavy machinery. One U. S. manufacturer of ready-mix concrete trucks recently announced its use for turning mixing drums.

The drive on the Yale & Towne lift truck consists of a single variable displacement hydraulic pump of the axial piston type connected directly to the drive shaft of the engine, and a fixed displacement hydraulic motor coupled to the differential of the lift truck. Between the two units are hydraulic lines which carry fluid at pressures as high as 4,000 psi.

Under certain conditions a hydrostatic drive can replace the transmission, clutches, drive shafts, universals, differentials, and even driving axles found on conventional machines (ENR May 12, p. 62).

In the lift truck application worked out by New York Air Brake, however, the Dynapower drive replaced the conventional transmission, clutch, and drive shaft.

The axles and differential of the standard power train remain. According to company representatives this arrangement provides the advantages of hydrostatic drive with a minimum of changes in the basic design of the lift truck.

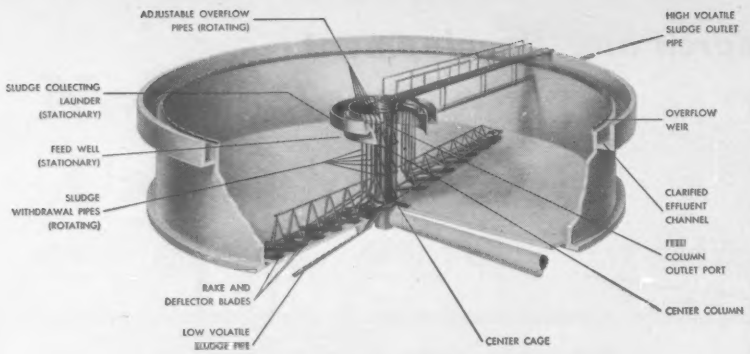
Among the advantages claimed for the lift truck's Dynapower drive:

- Rapid but smooth change in travel direction from forward to reverse.
- Positive and precise control over machine travel under all conditions of operation.
- Ability to produce maximum torque at any engine speed including idle.
- No wheel spin on loose material.

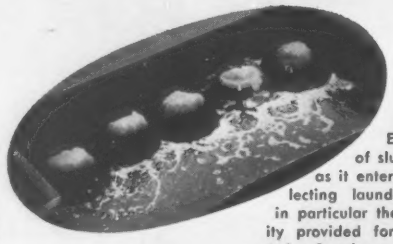
To prove these claims, New York Air Brake planned and staged a demonstration last month at its Watertown, N. Y., plant.

In one test the Yale & Towne lift truck was run forward to high speed, then suddenly reversed without being braked. The reversal was smooth and even, although so fast that the operator was lifted from his seat.

(Turn the page)



3-WAY CAPABILITY of the RSR Clarifier to make high-volatile sludge, low-volatile sludge and clarified effluent separation is illustrated in the cutaway drawing.



VISUAL EVIDENCE of sludge flow as it enters the collecting launder. Note in particular the flexibility provided for varying sludge flow from each individual uptake pipe.

NOW... *Rapid, continuous sludge removal with the new* DORR RSR CLARIFIER

For rapid removal of fresh sludge on a continuous basis, the Dorr® RSR Clarifier affords visual evidence of quality and quantity of sludge removed from secondary clarifiers. This is accomplished by removal of sludge from the entire floor area by rotating uptake pipes. Simple adjustment provides for controlled rate of sludge removal from each individual pipe.

In operation, a combination of rake and deflector blades channel the fresh sludge to an area under the withdrawal pipes where the sludge is lifted by hydraulic head to the collecting launder. Sludge flows from the launder to a sump for recycling or wasting following conventional practice. The sweeping action of the rake blades also provides for removal of grit and other inorganic material *without* dewatering the tank.

For information on the RSR Clarifier and on the complete line of Dorr-Oliver equipment and methods for sewage treatment, write Dorr-Oliver Incorporated, Stamford, Conn.

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In a demonstration of control, one front wheel of the lift truck was placed hard against a 4-in.-high block. On the application of power, the truck crawled slowly over the block without any racing of the engine and came off it on the other side without any increase in vehicle speed.

To show the torque output of the hydrostatic drive at low engine speed, the lift truck was loaded with 3,500 lb and, with its engine idling, was run up a 15% grade. The engine did not stall, and there was no apparent strain on it. The lift truck was then slowly backed down the grade without application of brakes to show its dynamic braking power. In a final demonstration the lift truck maneuvered across loose cinders that had mired a similar machine equipped with a conventional transmission.

New York Air Brake Co.'s pump is of the axial piston type and is connected directly to the drive shaft of the engine. The unit has nine pistons set in a cylinder block, which revolves at engine speed.

A pivoting pump cam controlled by the operator regulates the length of piston stroke and, in turn, the amount of fluid sent to the motor.

When the pump cam is perpendicular to the axis of the pistons, the pistons revolve without any reciprocating action and without pumping any fluid to the motor.

As the angle of the cam is increased, piston stroke lengthens and vehicle speed increases. A reversal of the cam angle reverses the direction of fluid flow and the direction in which the vehicle is traveling.

One unusual feature of the system is the similarity between the motor and pump. The two units have almost complete interchangeability of parts. This helps cut the cost of the system by reducing the number of tooling and production operations required for manufacturing the units, and it reduces the number of parts that must be kept on hand for repair and maintenance.

U. S. Forest Service To Build Research Center

The U. S. Forest Service will build a $300,000 research center at Wenatchee, Wash.

Properties of soils and water will be studied in an effort to learn what happens to rain water when it hits the ground, how much is absorbed by soil, what affects runoff and absorption and what causes erosion.

Results are expected to be useful in building roads and water projects and in logging.

On the job with Bethlehem Steel

DOUBLE-DECK FOR GEORGE WASHINGTON BRIDGE. The 14,137-ton steelwork for the new lower-level roadway of the George Washington Bridge, fabricated and erected by Bethlehem, was completed in mid-1960. By building upward from flotation barges, traffic on the upper-level roadways was uninterrupted throughout the entire erection period. The Port of New York Authority, owner and operator, plans to open the lower deck to traffic in 1962.

STEEL STRAND SUPPORTS CIRCULAR ROOF. This structure will help promote San Antonio, Texas, as a convention city. It's the Villita Assembly Building, owned by the Public Service Board of San Antonio. Its saucer-shaped roof is supported by 200 Bethlehem strand assemblies, consisting of prestretched strands with swaged fittings, and turnbuckles. Prestretching of the strand limited the residual constructional stretch, and also raised the modulus of elasticity.

General Contractor: G. W. Mitchell
Architects: O'Neil, Ford and Associates;
Nicanor Salas, project architect
Structural Engineer: W. E. Simpson Company
Steel Fabricator: Alamo Iron Works

BETHLEHEM STEEL

NEW BUILDING ON CAPITOL HILL. Bethlehem Wire Rope raises 15-ton steel truss, 36 ft long, one of 128 trusses required in erecting the steelwork for the House of Representatives Additional House Office Building in the nation's capital. Bethlehem is fabricating and erecting 23,000 tons of steel for this 9-story giant, which will be the largest of the buildings occupied by the legislative branch of government.

General Contractor: McCloskey and Company

ROOF WITHOUT A BUILDING. The roof is in place, resting smartly on four 70-ft-high concrete columns. This method of construction permitted completion of the walls and interior work during winter months. It's the Memorial Coliseum, constructed by the Portland Exposition Recreation Commission for the City of Portland, Oregon. The roof structure, containing 1,250 tons of Bethlehem structural steel and some 35,000 Bethlehem high-strength bolts, was completed two weeks ahead of schedule.

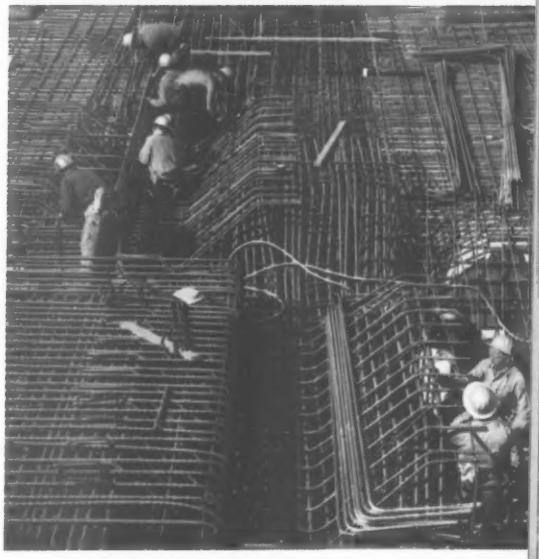
Architects: Skidmore, Owings & Merrill
Structural Engineers: Moffatt, Nichol & Taylor
General Contractor: Hoffman Construction Co.
Structural Steel Fabricator: Poole, McGonigle, and Dick

STEEL PILING FOR SACRAMENTO RIVER CHANNEL. Bethlehem sheet piling awaits installation in walls of a barge canal and navigational lock being built near Sacramento, Calif., under supervision of U. S. Army Corps of Engineers. This is the first project in the West using sheet piling to construct a deep water channel.

BETHLEHEM STEEL

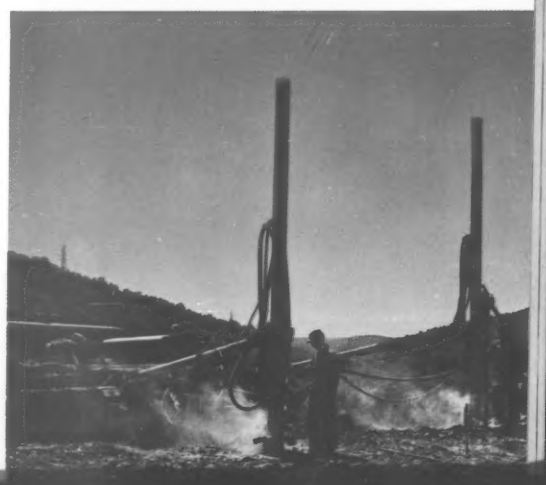
GOAT ISLAND BRIDGE ABOVE NIAGARA FALLS. Built across the roaring waters of the Niagara River is the American Rapids Bridge, part of the New York State Power Authority's park system along the American side of the river. The 450-ft main span is the longest of any bridge of its type in the country. This job required 2,200 tons of steel, fabricated and erected by Bethlehem.

Designers and Engineers: Praeger-Kavanagh



STEEL REINFORCES ATLAS LAUNCHING PAD. This complex of Bethlehem reinforcing bars is imbedded in a concrete launching pad at an Atlas missile base near Reardan, Washington. Unusually heavy concentration of steel bars is required to withstand terrific impact of an Atlas launching.

General Contractor: MacDonald-Patti-Scott-Leavell



NEW BY-PASS IN EASTERN PENNSYLVANIA. Pennsylvania Department of Highways recently began the construction of the Scranton By-pass. Here you see Bethlehem hollow drill steel boring blast holes for rock excavation. Other Bethlehem products being used are reinforcing steel, fasteners, wire rope, structural steel, and guard rail.

Contractor: Central Pennsylvania Quarry Stripping and Construction Co.

STEELWORK ERECTED IN LESS THAN A WEEK. This web-like steel skeleton is the framework for the Greek Orthodox Church, Oakland, Calif. Containing 115 tons of Bethlehem structural shapes, joined by Bethlehem high-strength bolts, it was erected in only 5½ working days. In addition to speeding the work, bolting greatly reduced the noise in this residential area.

Architects and Engineers: Reid, Rockwell, Banwell & Tarics
General Contractors: Williams and Burrows, Inc.

This literature is yours for the asking

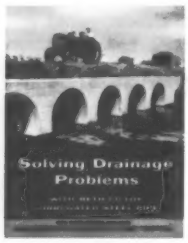
CATALOG 433. Dimensions, properties, and specifications for steel sheet piling used in cellular and straight-wall structures.

BOOKLET 514. Technical data on an improved beam-type guard rail. Has helpful detail drawings.

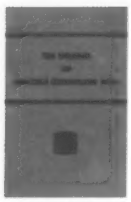
CATALOG S-58. Information and tables on structural shapes for architects, engineers, and designers.

BOOKLET 563. Uses of high-strength bolts in connecting structural steel members. Includes latest revisions of specifications.

BOOKLET 549. Picture story of the fabrication and erection of 53,000 tons of steelwork for The Chase Manhattan Bank.



BOOKLET 425-B. The fabrication, design, and installation of steel pipe made from corrugated steel sheets.



BOOKLET 527-A. Contains joint details and procedures for welding reinforcing bars. Includes tables and drawings.

BOOKLET 345-A. Describes carbon and ultra-alloy steels used in rock drilling. Includes solid and hollow drill steel.

FOLDER 599-A. Describes corrugated steel plate used as flooring in new and existing bridges and overpasses.

CATALOG 493. Covers every wire rope application used in construction. Also includes section on wire rope fittings.

PUBLICATIONS DEPARTMENT
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

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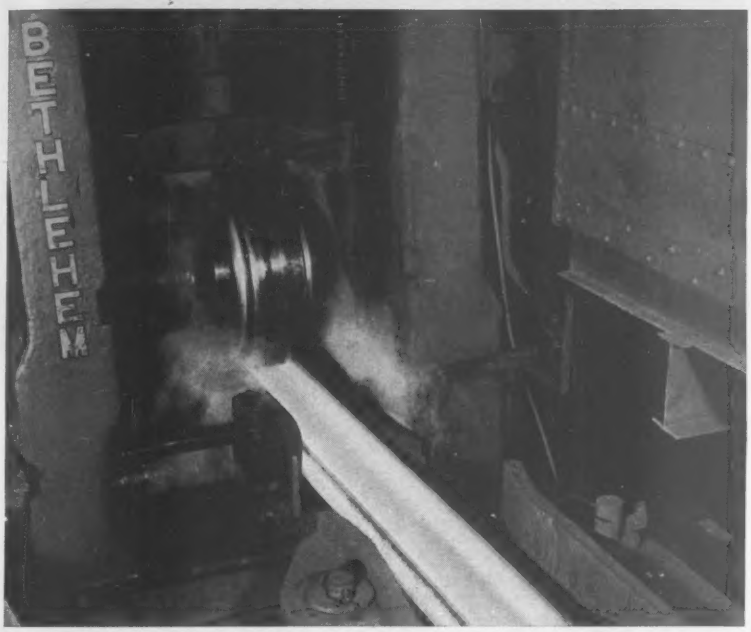
Bethlehem Steel Rolls New Beams



New sections will aid designers' quest for economy.

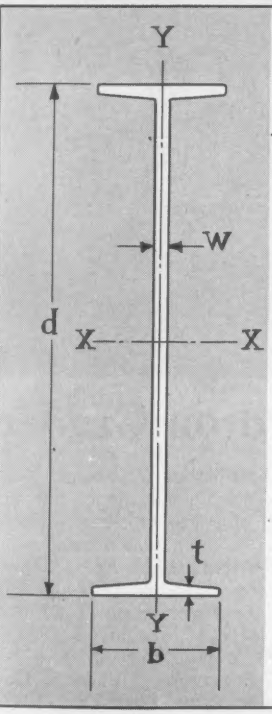
Eleven new structural steel beams, generally of lighter weight than others of equal depth, are now available from Bethlehem Steel Co.

Seven of the new sections are lighter additions to the regular wide-flange series, ranging from 18- to 36-in. depths. Two of the remaining four sections will extend the range of the light-beam series from 14- to 16-in. depth.

The new beams supplement recent advances in structural steel construction resulting from new design techniques and high-strength steels. All eleven additions are "economy sections" (i.e. the lightest beams furnishing a particular section modulus). They will help designers realize the economies of composite design and plastic analysis.

The new sections are available in three new high-strength steels, ASTM A36, A440 and A441, authorized in recent specifications of the American Society for Testing Materials. They will also be available in A7 steel and other grades presently produced.

Bethlehem's plants in Bethlehem, Pa., and Lackawanna, N. Y., are rolling the new sections.



Section Number and Nominal Size	Weight per Foot	Area of Section A	Depth of Section d	Flange		Web Thickness W	AXIS X-X			AXIS Y-Y		
				Width b	Thickness t		I	S	r	I'	S'	r'
	lb.	$in.^2$	in.	in.	in.	in.	$in.^4$	$in.^3$	in.	$in.^4$	$in.^3$	in.
B36 36" WF 36x12	135	39.70	35.55	11.945	.794	.598	7796.1	438.6	14.01	207.1	34.7	2.28
B33 33" WF 33x11-1/2	118	34.71	32.86	11.484	.738	.554	5886.9	358.3	13.02	170.3	29.7	2.22
B30 30" WF 30x10-1/2	99	29.11	29.64	10.458	.670	.522	3988.6	269.1	11.70	116.9	22.4	2.00
B27 27" WF 27x10	84	24.71	26.69	9.963	.636	.463	2824.8	211.7	10.69	95.7	19.2	1.97
B24 24" WF 24x9	68	20.00	23.71	8.961	.582	.416	1814.5	153.1	9.53	63.8	14.2	1.79
B21 21" WF 21x8-1/4	55	16.18	20.80	8.215	.522	.375	1140.7	109.7	8.40	44.0	10.7	1.65
B18 18" WF 18x7-1/2	45	13.24	17.86	7.477	.499	.335	704.5	78.9	7.30	31.9	8.5	1.55
B16L 16" BL 16x5-1/2	31	9.12	15.84	5.525	.442	.275	372.5	47.0	6.39	11.57	4.19	1.13
	26	7.65	15.65	5.500	.345	.250	298.1	38.1	6.24	8.71	3.17	1.07
B14L 14" BL 14x5	26	7.65	13.89	5.025	.418	.255	242.6	34.9	5.63	8.26	3.29	1.04
	22	6.47	13.72	5.000	.335	.230	197.4	28.8	5.52	6.40	2.56	0.99

New beam shapes include seven in wide-flange series and four in light-beam series.

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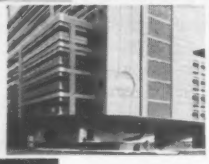
Medical Science Building of Dartmouth College Hanover, New Hampshire
Shepley, Bulfinch, Richardson & Abbott, Architects



Industrial
City of Boston Off Street Parking Facilities
S. S. Eisenberg, Architect

Housing
Connecticut State Housing New London, Connecticut
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Air Force Installations Dow Air Force Base Bangor, Maine
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Crusher Covers a Lot of Ground

Production of up to 5,600 cu yd in a 10-hour day, crushing down to 1-in. minus, has been an average day's work for the 4030 Portable Roll Crusher Secondary, according to the manufacturer.

The roll crusher is 40 in. in dia and 30 in. wide. The machine has a 5x14-ft, three-deck screening unit.

A hydraulic adjustment mechanism takes the work out of changing roll spacing and spring tension, the manufacturer says. With the hydraulic ram in place and a few strokes of the hydraulic pump, the springs are depressed and spacers can be quickly inserted or removed to increase or decrease the spring tension. Star type timing gears are standard equipment.

The scalping and finishing screen has an air spring and phasing bar arrangement easily adjusted to load conditions.

The unit is mounted on an "I" beam gooseneck frame. Triple running gear in the rear reduces axle loads to meet most state load limits. Either a fifth wheel or front running gear is available for transportation. UNIVERSAL ENGINEERING CORP., 625 "C" AVE., N.W., CEDAR RAPIDS, IOWA.

'Extras' Are Standard on Grader

The Model 502 motor grader offers a combination of planetary axles, four wheel drive, four wheel steer, four wheel brakes, power shift transmission and torque converter. The machine has four forward speeds up to 19.1 mph, and four reverse speeds up to 23.5 mph.

Four independent 16x4-in. face hydraulic brakes and a separate parking brake are standard equipment. Standard equipment also includes full hydraulic steering; 12-ft x 24-in. x ¾-in. hydraulic sideshift moldboard; 106 hp GMD 3-71 Diesel engine; and 14:00 x 24-10 ply tires. Optional equipment includes: combination manual and hydraulic steering; 123 hp GMD 4-71 Diesel engine; 13 and 14-ft moldboard, and 12 or 16 ply tires. Total weight with GMD 3-71 engine is 23,000 lb (23,200 lb with the GMD 4-71 engine). PETTIBONE MULLIKEN CORP., PETTIBONE NEW YORK DIV., 1212 E. DOMINICK ST., ROME, N. Y.

BUTLER TX-4 SMASHES TWO WORLD'S RECORDS

AUGUST 11

August 11 — Highway 31 near Mackinaw City, Michigan, Denton Construction Co. laid 7250 lineal feet of 24 ft. pavement 9 inches thick, in 12 hours, with a 4 bin BUTLER TX-4 Roadbuilders Plant. Each bin equipped with 4 batchers to feed 4 pavers.

AUGUST 25

August 25 — Same highway — same BUTLER TX-4 plant; same number of pavers: Denton laid 8036 lineal feet! Both these paving performances broke Denton's own 1958 record of 6029 feet of 24 ft. pavement, 9 inches thick. The August 25 demonstration of batching genius stands unapproached.

Does anyone want to try? Then get yourself a BUTLER TX-4. That, of course, is the primary and essential requisite.

HERE ARE INTERESTING HIGHLIGHTS

In the August 25 record each batch contained 728 lbs. of cement, 1586 lbs. sand, 1532 lbs. fine stone and 1512 lbs. of coarse. In 12 hours Denton used 26,300 bbls. of cement — equivalent to 66 railroad cars. And the BUTLER TX-4 plant handled 3898 separate batches on that historical day!

BUTLER BIN COMPANY

947 Blackstone Avenue
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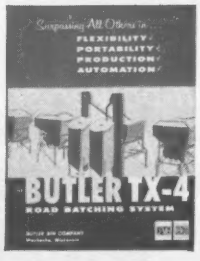

Send for new, detailed, profusely illustrated Bulletin on the BUTLER TX-4 Road Builders Plant. Just a postcard will do — but write today.

Better service accessibility alone makes the "Euc" C-6 your best tractor buy

In the Euclid C-6 crawler you get the advantages of job proved components and years-ahead engineering that keeps down-time and operating cost to the absolute minimum. You get unitized assembly of major components and service accessibility that is unsurpassed by any crawler . . . replacement labor costs are well below those for comparable tractors. For example, complete removal and replacement of a C-6 radiator takes less than one third of the time required for the same work on a competitive machine.

With easy accessibility for servicing and maintenance, the C-6 gives more work-time on the job . . . steps up production . . . helps beat the profit squeeze by cutting operating costs to a new low.

EUCLID Division of General Motors
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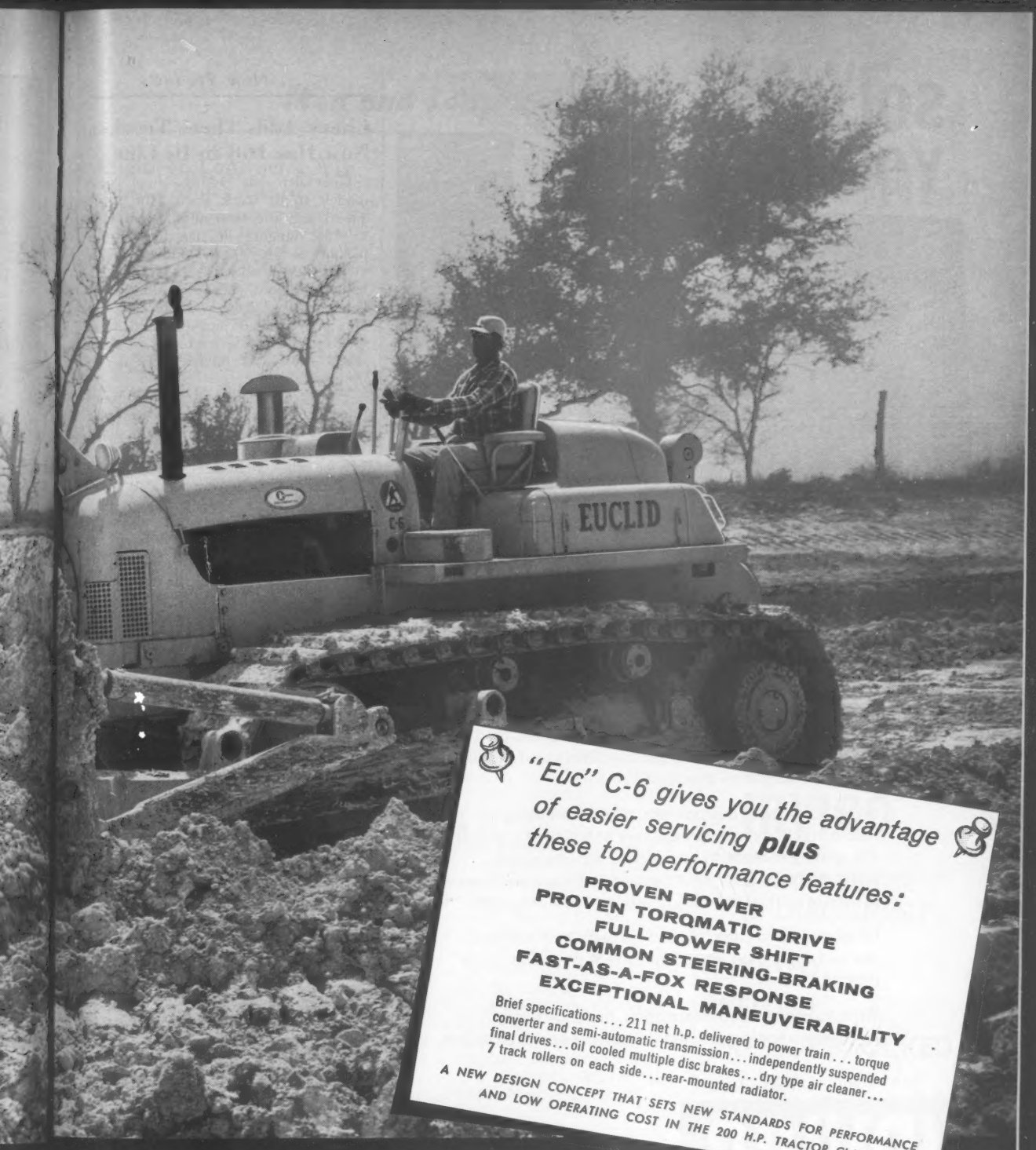
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

Full-power shift . . . this Euclid C-6 crawler responds like nothing you've ever touched!

Get all the facts and figures on the C-6 . . . you'll find low operating cost plus proven reliable performance make it your best tractor investment.



"Euc" C-6 gives you the advantage of easier servicing ***plus*** *these top performance features:*

PROVEN POWER
PROVEN TORQMATIC DRIVE
FULL POWER SHIFT
COMMON STEERING-BRAKING
FAST-AS-A-FOX RESPONSE
EXCEPTIONAL MANEUVERABILITY

Brief specifications . . . 211 net h.p. delivered to power train . . . torque converter and semi-automatic transmission . . . independently suspended final drives . . . oil cooled multiple disc brakes . . . dry type air cleaner . . . 7 track rollers on each side . . . rear-mounted radiator.

A NEW DESIGN CONCEPT THAT SETS NEW STANDARDS FOR PERFORMANCE AND LOW OPERATING COST IN THE 200 H.P. TRACTOR CLASS

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FOR MOVING EARTH, ROCK, COAL AND ORE

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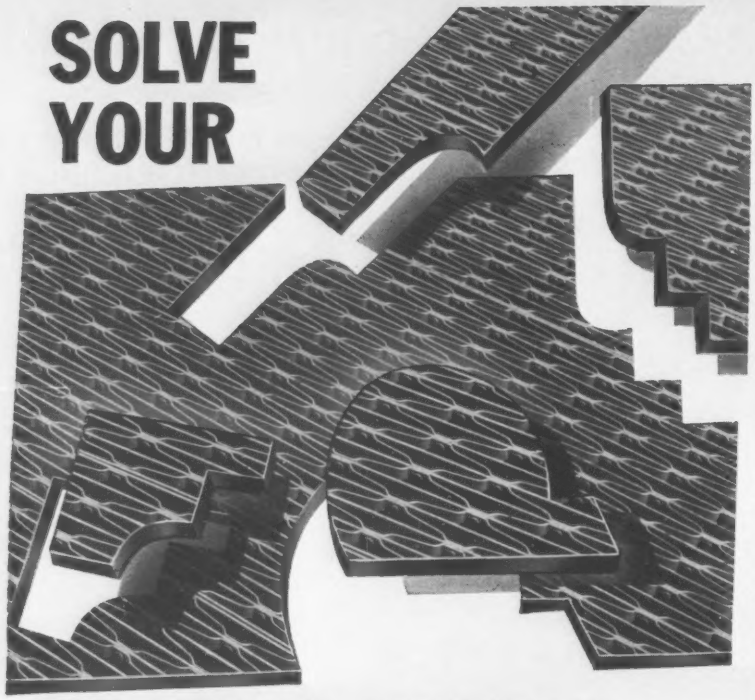

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If you need a grating that must fit around pipes and other objects, like a complicated jig-saw puzzle, there's one way you can be sure of getting panels that will fit perfectly into place—specify IRVICO.

IRVICO'S precise, custom fabrication eliminates costly field corrections and unnecessary handling of material. The grating is made in accordance with drawings approved by you. To assure easy installation, each panel is clearly marked to conform with erection drawings.

Whether your grating "puzzle" is simple or complex, you can depend on IRVICO to solve it so you can save time and money.

Write today for more information, or contact your Irving sales engineer, listed in the local phone directory.

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EST. 1902

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Chevy Adds Three Trucks; Now Has 168 in Its Line

Chevrolet has added three new models to its truck lineup for 1961. This brings the total number available to 168, ranging in size from ½-ton pickups to 36,000-gvw tandems.

The new trucks are 127-in. wheelbase, ½-ton, four-wheel drive units available as cab-chassis, wide box pickup and conventional pickup, rated from 4,900 to 5,600 lb gvw. Last year, four-wheel drive was offered only as an option.

For the entire line, engine options range from a 135-hp, overhead-valve six to a 230-hp V-8. A six speed automatic transmission, included in a complete line of optional transmissions, is again available for heavier duty models.

Last year's torsion bar front suspension has been retained, and new heavy-duty 12-leaf springs with ground capacity of 19,500 lb each for tandem axle models are optional. CHEVROLET TRUCK DIV., 3044 W. GRAND BLVD., DETROIT, MICH.

Tractor-Mounted Ditcher Digs 4½ Feet Deep

The manufacturer of the Pow-R-Ditcher line has added a model called the 3 P, designed to fit all three-point tractor hitches.

The machine digs 6- to 16-in. wide ditches to 4½-ft depths. Its digging chain is the same as those used on the largest models in the line. One lever controls digging speed. The tractor's hydraulic system powers the ditcher. The power take-off shaft has a double-disk friction slip clutch. THE VERMEER MFG. CO., PELLA, IOWA.

Rubber and Nylon Mixture Makes Heavy-Duty Tires

The "Grizzley" off-the-road tire for use on fork trucks, front dumpers, cranes and similar equipment combines the best features of both pneumatic and laminated tires, the manufacturer claims.

Material in the tire is new rubber and nylon, set into the mold as a uniform mixture and requiring only two light, flexible wire bands for reinforcement. This material makes possible a solid tire with a pneumatic-like ride to protect equipment from shock, according to the manufacturer. The "Grizzley" tire is said to resist punctures, cuts and abrasions under heaviest loads. BEARCAT TIRE CO., 442 WEST GARFIELD BLVD., CHICAGO 9, ILL.

Engineer, Contractor Win Annual Moles Award

Harry T. Immerman of Larchmont, N. Y., and Herman Brown of Houston, Tex., were named last week as the 1961 recipients of The Moles' annual awards given for "outstanding achievement in construction." They make up the 21st pair of honorees. The awards go to one member of the heavy construction society and one non-member.

Mr. Immerman, the member winner, is vice president and chief engineer of Spencer, White & Prentice, Inc., New York City consultants. Before joining that company 23 years ago, he was chief engineer for construction of Lewisohn Stadium in New York City and he designed and supervised installation of the first all-steel subway decking system in New York.

Mr. Brown, a native of Belton, Tex., is president of Brown & Root, Inc., a Houston contracting company, which he founded in 1914. He has also organized associate companies in engineering, marine operations, securities, railway equipment and gravel.

Vitro Engineering Picks 'Veep' for Construction

Paul H. Smith, former manager of the Tulsa office of Vitro's Treco division, has been picked to fill the newly created post of vice president for construction of Vitro Engineering Co. of New York City.

He joined the Refinery Engineering Co. in 1947 and was vice president before its merger with Vitro Engineering in 1959.

Vitro Engineering Co., a division of Vitro Corp. of America, is active chiefly in nuclear, petroleum, chemical, space and metallurgical construction. Mr. Smith will direct all of Vitro's construction work from New York City.

Public Information Chief Named by Engineer Corps

Colonel Stanley T. B. Johnson is the new Chief of the Technical Liaison Division, Office of the Chief of Engineers, Washington, D. C. He will be directly responsible to the Chief of Engineers for public information activities of the Corps.

Col. Johnson, has been District Engineer at Baltimore since February, 1957.

He replaces Lieutenant Colonel H. A. Benton who has been acting chief of the Division since the former chief, Colonel Robert R. Robertson, was reassigned as Deputy Division Engineer, South Pacific Division, San Francisco.

Col. Johnson graduated in 1935 from the United States Military Academy and in 1938 received a masters degree in engineering from Cornell.

Briefs . . .

Business

Robert A. Escher has been elected to succeed his father, **James W. Escher**, as president of White Construction Co., New York City. The elder Escher moves up to chairman of the board.

Merritt-Chapman & Scott Corp. has elected former construction manager **Norman Eastwood** to vice president of the construction department. He has been with the New York-based construction department since 1945.

In a move to handle expanding operations, Deisel Construction Co. has opened three new posts: **Paul Cone**, vice president of the major Manhattan building company since 1957, has been appointed executive vice president in charge of operations and **Irwin Miller** and **Harold Schiff** have been named vice presidents.

E. Bradford Ripley, after 34 years with Connecticut Power & Light Co., has been appointed supervising mechanical engineer by Burns and Roe, Inc., New York City consulting engineers and constructors. He will coordinate mechanical design of power plants and other projects.

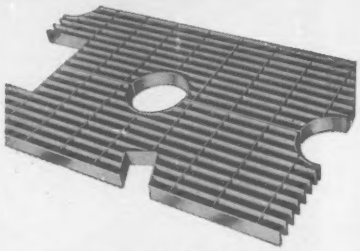
A. Morgan Johnson has accepted a position as vice president of Maddock & Associates-Engineers Inc., Phoenix, Ariz. Previously, he was president of Civil Engineers, Inc., in Detroit.

Jerome P. Pickard of Washington D. C. has been appointed to head the expanded research program of the Urban Land Institute of Washington. ULI is an independent research organization specializing in urban planning.

Leo A. Daly Co., engineer-architects based in Omaha, Neb., has announced six new vice presidents: **W. A. Alsmeyer**, Omaha, head of structural engineering and special research; **John M. Free**, Omaha, head of engineering and production; **W. L. Larson**, Omaha, design department head; **John L. Haff**, St. Louis, job captain; **H. K. Lockwood** Seattle, executive director and **Lee Windheim**, San Francisco, executive director.

Cornell, Howland, Hayes & Merryfield of Corvallis, Ore., have admitted a new partner. He is **Earl C. Reynolds, Jr.**, former manager of the firm's Boise, Idaho, office.

SOLVE YOUR GRATING PUZZLE



Every shipment of IRVICO grating is carefully checked and inspected to see that cutouts and sizes of panels are exactly in accordance with approved drawings.

When the job is delivered to you, the panels will fit into place easily and quickly, even where the application must be made like a jig-saw puzzle.

For more than half a century, the name Irving has meant grating fabrication under the rigid discipline of quality standards. Every job is treated individually, with considerable attention given to exact fit.

specify IRVICO

and you'll get

"A FITTING GRATING for EVERY PURPOSE!"

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in steel, aluminum and other metals.

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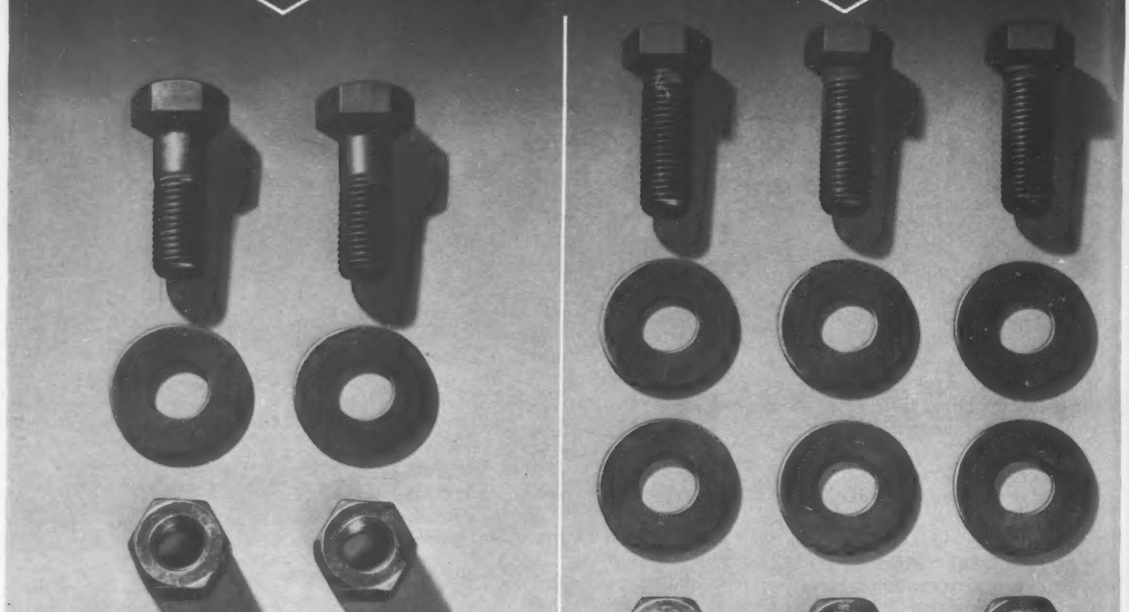
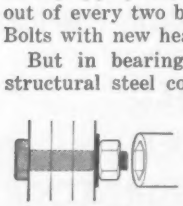
These now replace these



How you can cut structural steel costs with new design RB&W High Strength Bolts

In any type joint, you save one hardened washer out of every two by using RB&W High Strength Bolts with new head and thread design.

But in bearing joints – the majority of all structural steel connections – the savings really soar. For you also eliminate one fastener out of every three formerly required . . . regardless whether they were rivets or regular high strength bolts.



This sketch shows why. The new bolt has shorter thread length. Shear planes pass through full shank section only, thereby enabling the full, allowable shear strength of the bolt to be utilized. The new larger head furnishes extra bearing area to prevent crushing when bolt is torqued up to its full recommended tension. Only one washer is needed . . . under head or nut whichever is rotated in wrenching.

The AISC approves this fastening breakthrough. It has been fully tested and approved by the Research Council on Riveted and Bolted Structural Joints. The sooner that structural engineers work it into their new designs, the sooner everybody benefits. Building owners benefit through lower costs; construction shop fabricators benefit through more tonnage assembled faster with existing shop space; erectors benefit through fewer holes to fill and less material cost.

Consult us for more details on these bolts that have *certified* quality. Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.

R B & W
116th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. Additional sales offices at: Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco.

LARGEST INDEPENDENT PRODUCER OF HIGH STRENGTH BOLTS FOR CONSTRUCTION

Books

Factory Design Critique

INDUSTRIAL ARCHITECTURE—AN ANALYSIS OF INTERNATIONAL BUILDING PRACTICE —By James F. Munce. 232 pages. F. W. Dodge Corp., New York, N. Y. $14.75.

Are architects more important than engineers in the design of industrial buildings? This British author believes they are and bemoans the fact that architects are not the controlling force in this field.

His arguments, however, are specious. In his eagerness to build up the role of the architect, he overlooks the weaknesses of present architectural training: Architects generally are not taught sufficient engineering subjects nor do they normally acquire sufficient field experience before engaging in design practice. In addition, the author belittles engineers, considering their training too specialized. In doing so, he ignores the fact that most engineers study several branches of engineering while specializing and that many spend part of their career in the field, becoming familiar with construction operations. Furthermore, many engineers are involved in maintenance of plants and thus learn how materials behave in use.

Despite the weakness of the theme, the book is useful as a survey of building practice here and abroad. It presents a history of factory design that is broader than usually found in American books, because it incorporates developments abroad as well as those in the U. S. It considers esthetics, planning and structure of a large number of factories. It discusses factory services —site investigation, heating, air conditioning, ventilation, lighting, water supply. And it analyzes the relationship of automation to factory design.

Russian Quake Design

TRANSLATIONS IN EARTHQUAKE ENGINEERING —150 pages. Earthquake Engineering Research Institute, P.O. Box 85, Berkeley 1, Calif. Paperbound $3.25; Clothbound $5.

Seven Russian technical papers cover such subjects as design of flexible structures for seismic loads, a simplified method for earthquake-resistant design of structures and vibration of tall buildings.

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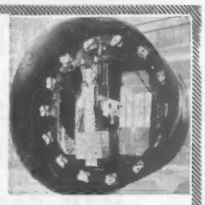

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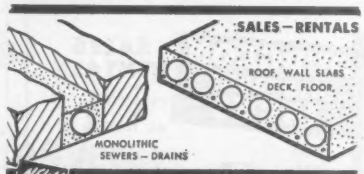

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AMPHIBIAN ENGINEER OPERATIONS: VOLUME IV—ENGINEERS OF THE SOUTHWEST PACIFIC, 1941-1945—766 pages. Superintendent of Documents, Government Printing Office, Washington 25, D.C. $11.50.

In nearly 150 landings during the war in the Southwest Pacific, a special type of soldier-seaman-engineer played a vital role. Manning various kinds of craft, he put the combat forces and their equipment ashore and then supported the beachheads with supplies as long as the invasion troops required.

This book is the detailed history of these amphibian engineers, who were trained and organized into Engineer Special Brigades by the Corps of Engineers when it became apparent that an island-hopping war required this kind of engineering service. It is the seventh to be published in an eight-volume series comprising the report of the Chief Engineer of the Army Forces in the Pacific, Maj. Gen. Hugh J. Casey.

The Engineer Special Brigades, which operated in the Southwest Pacific, included some 50,000 men. They logged more than 500,000 individual boat trips in 800 LCVP's and 2,000 LCM's and covered nearly 8 million miles. Their gunners also shot down some 50 Japanese aircraft and captured or destroyed more than 150 enemy boats.

The book presents a detailed account of all the landings in which amphibian engineers participated, and adds up to an exciting story of a difficult and dangerous war assignment.

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EARTH MANUAL—By specialists in the U.S. Bureau of Reclamation, Department of the Interior. Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C., or Bureau of Reclamation, Denver, Colo. $3.75 post paid.

Soils used in foundations and as materials for dams, canals and other types of water control structures are treated in this new edition of a 1951 book that sold 6,000 copies.

The manual describes the Unified Soil Classification System developed jointly by the Bureau of Reclamation and the Army Corps of Engineers. It also covers soils investigations, compaction control and soils aspects of foundation construction.

The appendix contains detailed procedures in sampling, classification, and field and laboratory testing of soils.

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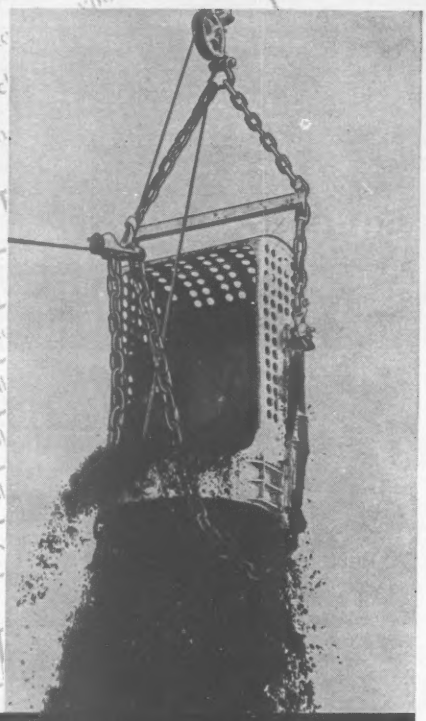

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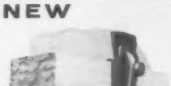

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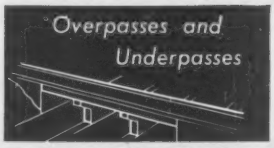

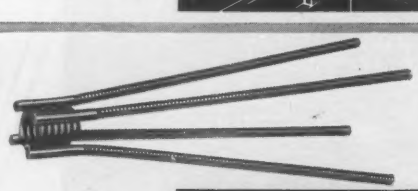

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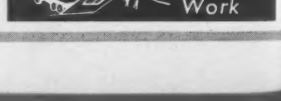

Equipment governs design of . . .

Rapid City Water Treatment Plant

Designed around apparatus approved and paid for by the city, this $1,546,034 Rapid City, S. D., water treatment plant contract went to Drake, Henne & Weisenberger, Minot, N. D. Purvis Construction, Yardley, Wash., missed by just 2.5%, while the high of eleven bidders was 14% above the low. The winning bid was 3% under the engineer's estimate. Flahart-Dittman & Francis, Rapid City, are the consultants.

The base bid specifies "Infilco" and "Wallace & Tiernan" equipment, but contractors could place alternate bids using equipment from manufacturers approved prior to the bid opening. Drake, Henne & Weisenberger's alternate bid was low, their base bid was second low and took the contract.

The owner will furnish about $47,000 worth of pumps and motors. The contractor will order the equipment listed in the base bid which will be billed direct to the city. The cost of this equipment will be deducted from the contractor's total contract.

Prevailing wages on the job include: tractor operator, $2.85/hr; common, $2.00; carpenters, $2.95; and plumbers, $3.50.

The bidding included:

1C Drake Henne Weisenberger, Minot, N. D.	$1,546,034
2 Purvis Construction, Yardely, Wash.	1,585,027
11 Carrothers Construction, Paola, Kan.	1,798,727
EE Flahart-Dittman & Francis, Rapid City, S. D.	1,600,000

Bids: 7-15-60 Items	Unit	Quantity	Unit Prices 1C	2
*Items awarded				
Water treatment plant				
*base bid	ls	job	$1,519,451	$1,522,836
alternate base bid	ls	job	1,491,451	.....
Dehumidifier, incl ducts, mech equip, elec wire	ls	job	11,235	15,734
Truck, lift	ls	job	6,566	6,696
Elev, controls, wire	ls	job	10,247	10,807
Chem feed, standby, mfr Wallace & Tiernan and Hopper	ls	job	7,176	6,261
Vlvs, fit, elec controls, f&p pump #1	ls	job	4,015	3,711
pump #8 & #9	ls	job	4,782	6,245
Curb & gut, base stab crse, asph mat & seal coat	ls	job	8,872	10,420
Troughs wash, fiberglass, in lieu of conc shown in plan	ls	job	+9,350*	+13,050
Feeder (1) chem dry, standby	ls	job	+463.00	−1,276
Steel pipe in galleries	ls	job	−26,892	−11,500
Backwash sys semi-auto, in lieu of manual shown in plan	ls	job	+15,504*	+18,511
If plant as proposed is to be operational by 8/15/61 & compl in every detail by 10/15/61	ls	job	−40,500*	−20,000
If work as proposed is to be compl in every detail, ready for immediate & cont use by 5/1/62	ls	job	−34,000	−25,000

Base Equipment Bid & Alternates

Bids: 7-15-60 Items	Unit	Quantity	Unit Prices 1C	2
Clarifiers (2) cip base, Infilco	ls	job	$90,595	$130,968
alternate, Eimco	ls	job	66,017	.....
Filter consoles, vlvs & pneu control sys base, Infilco	ls	job	67,857	87,145
alternate, Fischer & Porter	ls	job	74,823	.....
Filter bottoms base, Wagner	ls	job	27,486	36,380
alternate, Bif	ls	job	22,890	.....
Chlorinator & chlorine evap base, Wallace & Tiernan	ls	job	21,240	24,898
alternate, Fischer & Porter	ls	job	19,961	.....
Feeders (3) chemdry & carbon base, Wallace & Tiernan	ls	job	14,162	16,960
alternate, Bif	ls	job	21,667	.....
Silicators, metering pump & silicate pump base, Wallace & Tiernan	ls	job	12,328	15,055
alternate, Fischer & Porter	ls	job	12,772	.....
Master control panel, plant base, Infilco	ls	job	20,774	25,155
alternate, Fischer & Porter	ls	job	7,343	.....
Wash sys, filter surf base, Palmer	ls	job	15,304	18,013
alternate, Palmer	ls	job	16,256	.....

Completion date: September, 1961
Liquidated damages: $75.00 per day

Flood Retarding Structure For Tennessee District

The award for the floodwater control structure at Jennings Creek, Whitleyville, Tenn., went to Ascon Inc., Nashville, for a low of $39,979. The winning bid was $1,011 above the engineers estimate, but 10% under the second low, Farrar Construction Co., McMinnville, Tenn. The high of five bidders was 39% above the award.

The Soil Conservation Service is the consultant for the owner, Jennings Creek Watershed Dist., R.F.D. 1, Whitleyville, Tenn.

The retarding structure and earthfill embankment will be at site 15, Jennings Creek Watershed, three miles west of North Springs, State Highway 56 near the Jackson and Macon county line. It will be 400 ft long and 45 ft high, with a five acre sediment pool, and 16 in. reinforced concrete pipe for the principal spillway. The engineer reports that the job is located in a limestone area, horizontally bedded.

The bidding included:

1B Ascon Inc., Nashville, Tenn.	$39,979
2 Farrar Const. Co., McMinnville, Tenn.	44,495
5 Eatherly Bros., Lebanon, Tenn.	65,944
EE Government estimate	38,968

Bids: 7-8-60 Items	Unit	Quantity	Unit Prices 1B	2
Clearing	ls	job	900.00	$1,800
& grubbing	ac	4.5	250.00	400.00
Exc, common	cy	4,498	0.36	1.00
rock	cy	1,841	4.00	2.00
CMP perf 8" ϕ	lf	140	4.00	3.00
non perf 8" ϕ	lf	100	4.00	3.00
Filter mat, drain	cy	276	11.00	6.00
RCP 18" or 16"	lf	242	15.00	15.00
Concrete cl B	cy	27.6	85.00	70.00
Steel, reinf	lb	2,067	0.18	0.15
Embankment	cy	41,364	0.42	0.56
Trash rack, CS door	ea	1	450.00	600.00
Head gate 16" ϕ	ea	1	650.00	400.00
Plugging core drillb	ls	job	150.00	300.00

Completion time: 140 working days

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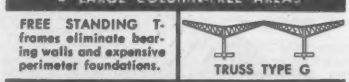

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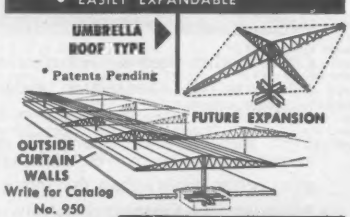

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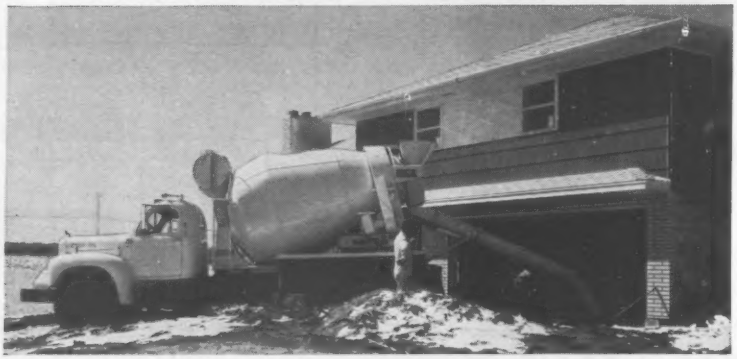
news and notes from the field

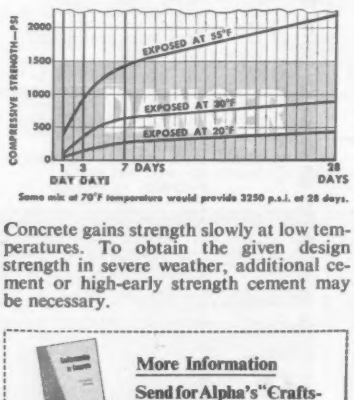
Tips For Cold Weather Concreting



Cold weather need not interfere with your concrete construction progress. Concrete work of all kinds has been done in extremely cold weather, and winter concreting can be of equal or even better quality than that placed in warm weather. Certain precautions must be observed, however, and an understanding of the effects of low temperatures on new concrete is necessary.

Effects of Low Temperatures

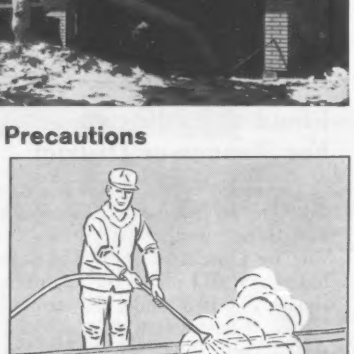
Low temperatures retard the rate at which concrete hardens and gains strength. Near 32°F. the rate is very slow, and below freezing there is almost no increase in strength.



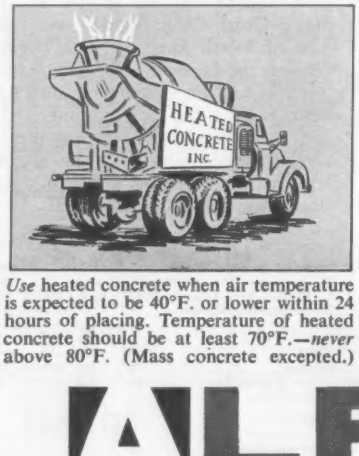
Same mix at 70°F temperature would provide 3250 p.s.i. at 28 days.

Concrete gains strength slowly at low temperatures. To obtain the given design strength in severe weather, additional cement or high-early strength cement may be necessary.

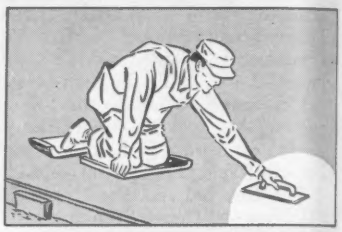
Precautions



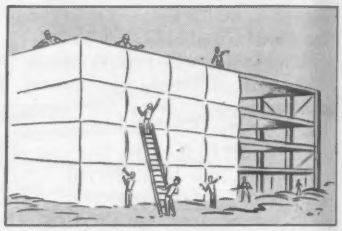
Subgrade must not be frozen or muddy. Remove all ice and frost from inside the forms and from reinforcing steel. This is best done with live steam.



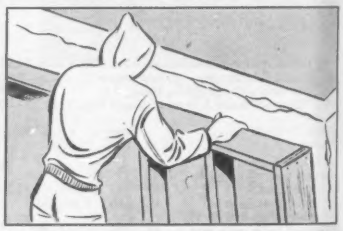
Use heated concrete when air temperature is expected to be 40°F. or lower within 24 hours of placing. Temperature of heated concrete should be at least 70°F.—*never* above 80°F. (Mass concrete excepted.)



Delay final finishing of flat surfaces to allow for slow set when using cool concrete. Too early final finishing causes dusting.



Concrete must be properly placed and protected for at least 72 hours even though heated concrete is used.



Leave forms on longer in colder weather. Never continue stripping forms if concrete is marred as removal is started.

"Antifreeze" Mixtures

There are no known compounds that can be used in sufficient quantity to prevent concrete from freezing without harming the concrete itself. It is recommended that calcium chloride—which accelerates strength gain—should not be used in excess of 2% by weight of the cement. The chloride should be dissolved in water before use.

More Information

Send for Alpha's "Craftsmanship in Concrete" Folder #3 on cold weather concreting.

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Alpha Building, Easton, Pa.

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Atlanta	$4.38‡	$3.88a‡	$3.68a‡	$3.10a‡	$3.10a‡	$1.85‡a	$2.18a	$2.33a	$1.65r	$1.75r	$0.175o	$0.21o	$13.75g
Baltimore	4.44a	3.93a	3.57a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18a	.18a	13.50ou
Birmingham	4.43c	3.50cf	....	2.53na	2.53na	2.13na	2.75a	2.75a	1.65d	1.75d	.19	.19	14.25g
Boston	5.83ip	4.52ap	4.90imp	3.00qu	3.00qu	3.00qu	1.75qu	1.85qu	....	....	.23o	.275ao	15.00g
Chicago	4.53ag	4.02ag	4.15g	3.78‡e	3.78‡e	4.13‡e	3.95‡e	3.95‡e	2.25‡s	2.25‡s	.26‡s	.26‡e	14.00e
Cincinnati	4.84c	4.34c	4.31c	2.29‡cu	2.34‡cu	2.44‡cu	2.55‡cu	2.74‡cu	1.90u	1.80u	.19o	.25ao	15.00qr
Cleveland	4.77/.84‡	....	4.19‡ae	....	2.25ae	1.75ae	2.70‡y	2.70‡y	2.20‡f	2.20‡f	....	.23f	17.25u
Dallas	3.65s	3.25s	3.53a	2.65‡a	2.75‡a	1.90‡	2.47	2.67	....	....	....	.285	12.10s
Denver	4.89a	4.39a	4.89	1.95‡	2.15‡	1.42‡b	....	3.00‡x	....	....	.25	.37ao	11.90
Detroit	4.50a	3.91apq	4.08Ra	2.50cc	2.50cc	2.16cc	2.80ddbm	2.80ddbm	3.15ddaa	3.50ddaqaa	.24w	.27‡au	15.50eae
Kansas City	4.52a	3.92a	4.30a	....	....	1.85‡a	2.00‡a	2.00‡a	....	....	.22a	.26c	14.50
Los Angeles#‡	5.12ch	4.68ch	5.60c	2.86‡at	2.76‡at	2.41‡at	2.41‡at	2.46‡at	....	....	.225f	.385	12.46hlz
Minneapolis	4.68a	4.17a	4.26a	2.70‡ae	2.70‡ae	1.60‡ae	4.00‡ae	4.00‡ae	....	....	.20q	....	14.55f
Montreal	3.36‡det	3.11‡det	3.72‡det	1.90‡at	2.15‡at	2.40‡a	1.90‡†	2.15††	2.00†	2.00†	.20†	.28††	10.80ek†
New Orleans	4.17b	3.65b	3.97b	2.61b	2.61b	2.16b	....	....	1.65d	1.75d	.25r	.35	14.00o
New York	4.71a	4.20a	3.77a	....	3.20bk	2.30bkw	2.85bbb	2.85bbb	....	....	.265nwe	.32bwo	17.60ay
Philadelphia	4.49‡ae	3.99‡ae	3.51‡e	1.95‡a	1.95‡a	1.55‡a	2.00‡a	2.30‡a	2.25‡a	2.25‡a	....	.20w	13.90s
Pittsburgh	5.65s‡k	4.62s‡	5.00s‡l	2.68‡aqv	2.68‡aqv	3.08‡aqv	2.00‡aqv	2.00‡aqv	2.10w	2.10w	.22rz	.22rz	16.15o
St. Louis#‡	4.54a	4.04a	4.24a	3.40‡as	3.40‡as	2.40/3.40‡as	1.75‡s	1.75‡s	....	....	.25‡•	.32‡co	13.65/14.10q
San Francisco	4.34c	3.79c	4.78c	2.02	2.02	2.12	2.17	2.17	....	....	.24	.28cl	13.00ew
Seattle	4.47‡a	3.75ag	4.65a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	....	....	.288s	.384cs	14.70f
Toronto	5.20i	3.84t	5.20i	2.40	2.40	2.05	2.40	2.40	2.40	2.40	.28	.30cu	13.75g

‡ Delivered. * Prices incl. dealers discount except as noted. # Add 4% sales tax. ## Add 2% Intrastate sales tax. R Revised. † Plus 6% Mun & Prov tax.

CEMENT: *a Less 10¢ disc. 15 days. *b Less 2% disc. 15 days. *c Less 10¢ disc. 10 days. *d 10¢ disc. 20 days. *e Truckload lots. *f Fob mill, add $14.58 to $21.31 per car switching charges. *g fob mill + freight. *h LCL. *i Less 2% disc. 10 days. *j Truck lots, fob yard. *k 100 bag lots *l over 150 sacks. *m Sold in bags only. *n Less 5% disc. 30 days. *o Plus 50¢ for Sat. del. *p 5-8 ton truckload. *q F.o.b. mill *s In bags & bbl. Only *t min. 7 tons

SAND, GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons up. *d Less 5¢ disc. 10 days. *e Less 2% disc. 10th. *f Less 2% disc. 15th. *g Less 5% for cash. *h Less than 5 tons. *j F.o.b. quarry. *k Barge lots asd. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *q F.o.b. yard. *r less 5% disc. 15th. *s Less 2% disc. 10 days. *t Less 10¢ disc. 10 days. *u Less 5¢ disc. 10 days. *v Less 2% disc. 15 days. *w Less 10¢ disc. 15 days. *x Incl. 35¢ switch. charge. *y F.o.b. dock. *z 5-8 tons. *aa Less 5% disc. 15 days. *bb Less 2% 25th of month *cc F.o.b. plant cl *dd F.o.b. plant tl

CONCRETE BLOCK: *a Cinder. *b Waylite. *c Haydite. *d Celocrete, *e 8¼ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i F.o.b. plant San Rafael. *m F.o.b. yard. *n 8 x 8 x 16. *o Less 2% disc. 10 days. *p Less 2% disc. 10th. *q Less 5% disc. 10th. *r Less 2% disc. 15 days. *s Less 2% disc. cash. *t Siporex, 7 x 8 x 18. *u Less 5% disc. 10 days. *v Less 12% disc. 15th. *w Made to order.

READY MIXED CONCRETE: *a 6 cu yd or over del. Man. *b 25 cu yds or more *c 10-100 cy. *d 1-3 mi. zone add 15¢ for ea. add'l 1-mi. zone. *e 3,000 lb comp *f 2,500 lb. comp., less 5% disc. 30 days. *g Less 25¢ disc. 15 days. *h Less 50¢ for cash. *i 5% off for cash. *j 2% off for cash. *k Federal tax included. Add 6% mun. & prov. tax. *l 1:2¼:3¼ base price. *m F.o.b. yard. *n Plus escalator clause. *o Less 2% disc. 15 days. *p Less 50¢ disc. 15 days. *q Less 2% disc. 10 days. Add 50¢ per zone. *r 2000 wgt. *s Less 5% disc. 10 days. *t Incl. 50¢ heating. *u Less 2% disc. 15th. *v Sat. del.+50¢. *w 10-100 cy. *x Del in zone 20-B. *y less 25¢, 10 days. *z less 1% in 30 days. *aa 6 bag mix

CURRENT MAXIMUM PRICES AT CEMENT MILLS: Subject to 10¢ discount, 15 days. For paper bags add 50¢ per bbl., not refundable. *Prices guaranteed through December 31, 1960*

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.55	Buffington, Ind	$3.55	Steelton, Minn	$3.60	Muskegon, Mich	$3.55	Toledo, O	$3.60
Clinchfield, Ga	3.55	Independence, Kan	3.35	Leeds, Ala	3.40	Saginaw, Mich	3.60	Milwaukee, Wis	3.50
Kingsport, Tenn	3.55	Hannibal, Mo	3.50	Duluth, Minn	3.60	Wyandotte, Mich	3.60	Green Bay, Wis	3.50
West Des Moines, Iowa	3.60	Northampton, Pa	3.50	Hudson, N. Y	3.50	Buffalo, N. Y	3.55	Ironton, O	3.55
Nazareth, Pa	3.50	Universal, Pa	3.60	Alpena, Mich	3.50	Oswego, N. Y	3.60	Montreal, Can	3.61
Bath, Pa	3.50	Waco, Tex. (+ 10¢ tax)	3.35	Detroit, Mich	3.60	Cleveland, O	3.65	W. Winfield, Pa	3.60
Lesley, Pa	3.50	Giant, S. C	3.55	Howes Cave, N. Y	3.50	Alsen, N. Y	3.50	Security, Md	3.50

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M carload lots	Wood per sq. yd. 3½ in. 15-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	e	e	e	$28.70PS	$45.00PS	$0.2740PS	$0.2358	$0.1308wS	$0.245wS	$0.1258S	$0.1328S	$0.245
Baltimore	e	e	e	21.00i	.....	.09i	0.18i	.09iwE	.18iwE	.095i	.10i	0.19i
Birmingham	.....	66.00i	.....	25.12	25.69O	.1069	0.1093O	.1162w	.11880w	.1006O	.1069	0.1093O
Boston	.....	.....	.....	22.00apS	46.00apS	22.00awS	46.00awS	.105awF	.32awF	.14aOR	.15OR	.....
Chicago	180.00‡a	95.00‡ab	3.95/4.00‡aj	22.00b	32.00b	20.40bv	30.40bv	.10bwH	.18bwH	.08b	.....	.....
Cincinnati	.....	.....	.....	26.00SU	.....	26.00ff	.....	.1165wSU	.....	.109	.1265	.....
Cleveland	.....	89.50‡d	6.30	26.00tA	.....	26.00tsA	.....	.1165twAF	.....	.....	.1265tA	.21A
Dallas	e	40/80p	e	26.90	46.35	.1138	.1983	30.50	52.45	.1100	.1138	.1983
Denver	.....	62.00s	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	114.00	.....	31.50R	.....	32.20wR	.....	30.24wIR	.....	27.84	.....	.24
Kansas City	e	e	e	18.75cl	.....	18.75cl	.....	.0875J	.....	.0675c	0.10	.....
Los Angeles#	e	e	e	19.00dmz	.....	19.00dtz	.....	20.50d Kz	.....	19.50dmaa	21.40iXy	.1842jXy
Minneapolis	.....	.....	3.73A	23.70	.....	23.70v	.....	.105w	.....	0.95	.1375bb	.....
Montreal	e	e	e	30.50n	43.60n	.167n	.211n	17.80nuE	22.20nuE	.155n	.242n	.27nX
New Orleans	e	e	e	20.00e	.....	20.00es	.....	.095ew	.....	.085eB	.095eBL	.1905eB
New York	.....	.....	3.70f	20.99mO	42.95mO	20.99vO	42.94stO	9.61uF	19.01uF	.....	9.68u	19.11u
Philadelphia	.....	.....	.....	21US	.....	21US	.....	.095UwS	.....	.095US	.....	.....
Pittsburgh	60.00k	95.00n	6.35n	31.20is	.....	31.20isv	.....	.1403tS	.....	.14tS	.1403i	.....
St Louis##	.....	.....	.....	19.74f	21.65	.1825f	.1825	.09fw	.092fw	0.165f	.1825O	.308X
San Francisco	.....	70.00	.....	22.50qdd	41.00qdd	22.50qkxdd	40.00qkxdd	22.50qNdd	46.50qNdd	23.25awWdd	23.50qxXdd	.2023qXdd
Seattle	.....	.....	.....	24.00s	47.00h	33.00sscc	38.50	25.50KE	.....	28.75hvF	25.80hsX	49.90hrX
Toronto	.....	120.00/‡	4.50f	38.90	59.01ee	0.2075	0.2773ee	0.222w	0.2704wee	0.233	0.2122Ee	.2682Ee

‡ Delivered. # Add 4% sales tax. ## Add 2% Intrastate sales tax. R Revised.

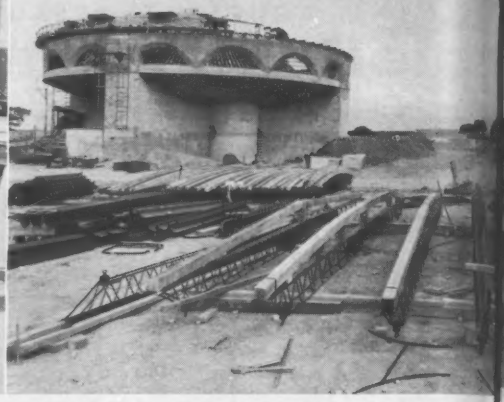
PAVING BRICK & BLOCK: *a Less 2% disc. 10th. *b 3 x 3½ x 8. *c 2¼ x 3½ x 4. *d Truckload lots. *e Not used. *f 2" interior 6 lb tr. *g Less $1/Mdisc. 15th. *h 2" tr, 8 lb. *i 3 x 3½ x 8½. *j 2¼", 6 lb. tr. *k Used. *l Redshale. *m Pine: oak $8.57. *n Truck del. *o Less $1 /M disc. 15 days. *p Used: $40; new: $80.

ASPHALTS: *a F.o.b. refinery, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segundo. *e F.o.b. Baton Rouge. *f F.o.b. Hartford, Ill. *g F.o.b. refinery, Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50-110 'penetr. *l Less than 100 penetr. *m 40/300 penetr. *n F.o.b. refinery, Montreal. Fed. tax included; add 6% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60/70 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 150/300 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks *y F.o.b. Oakland. *z F.o.b. Edmonds. *A F.o.b. refinery, Cleveland, *B F.o.b. Destrehan, La. *E RC. *F Also RC. *G Also MS *H RC 0-5 incl. *I MC 4. *J MC, RC $0.095. *K MC 3, 4, & 5. *L MS. *M MC 1-5. RC 1-5, $0.0918. *N MC 3. *O Truck-load. *P F.o.b. refinery, Atlanta. *Q F.o.b. Eldorado, Ark. *R Delivered within 50 mi *S Less 2% disc. 10 days, net 30. *T Less 1% disc. 10 days. *U F.o.b. refinery. *V Less 2% disc. 15 days. *W SC 2. *X RS 1. *Y SC 1. *Z Incl. 10% Sales Tax. *aa SC 3, 4, & 5. *bb RS 3. *cc In used drums. *dd less disc of $1 ton. ee 45 Imp. gal. drums *ff 60-150 penetration

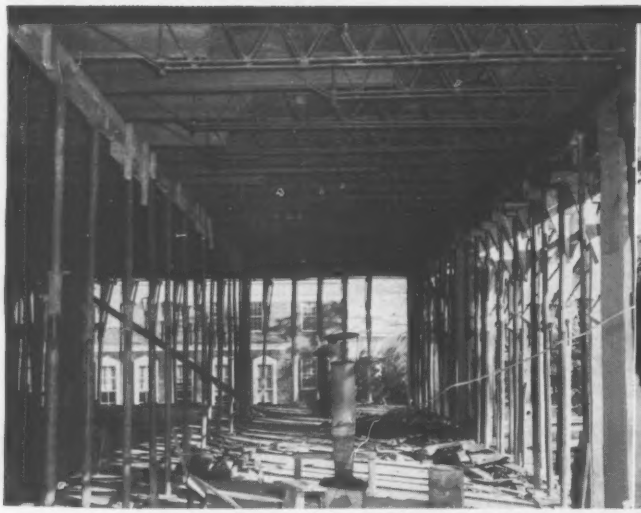
See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Oct. 20; Next, Nov. 24.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Oct. 27; Next, Dec. 1.
- Wage Rates, Building Board Insulation: Last, Nov. 3; Next, Dec. 1.
- Iron & Steel Products, Pipe: Last, Oct. 13; Next, Nov. 17.

Easy access and movement for all trades are made possible by Rex-Spanall shoring during construction of the Alexander Department Store, Rego Park, New York.



The architectural genius of Frank Lloyd Wright is given expression in concrete with the help of Rex-Spanall in construction of the domed roof of the Greek Orthodox church for the Milwaukee Hellenic community.

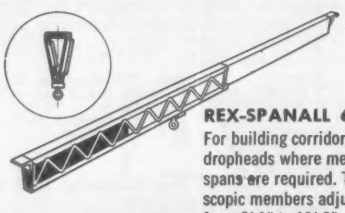


Salamanders offer no danger of fire when Rex-Spanall shoring clears the area in this dormitory construction for the University of Maryland.

Flash floods will not destroy the shoring underneath this bridge on the Wheatland-Chugwater Road, Richeau Creek, Wyoming. Rex-Spanall eliminates all piling.

The complete REX-SPANALL line . . . what you need, when you want it,

REX-SPANALL 46
Prestressed girder and steel girder bridges, narrow corridors and narrow continuous dropheads. Spans from 4′ 2″ to 6′ 11″.



REX-SPANALL 610
For building corridors and dropheads where medium spans are required. Telescopic members adjust from 6′ 1″ to 10′ 2″.

REX-SPANALL 1015
Perfect for multi-story form construction with adjustable spans from 9′ 11″ to 15′ 5″.

streamline your shoring like this...

SAVE WITH REX-SPANALL

Profit more from Rex-Spanall, the original, most highly developed adjustable steel shoring. Instant telescopic action... easiest handling...fastest erection...built-in camber compensation.

Rex-Spanall does the whole job!

at your service: engineering assistance...trained shoring specialists...IMMEDIATE DELIVERY from 53 conveniently located warehouses.

CALL THE REX-SPANALL DISTRIBUTOR NEAREST YOU... LET SHORING SPECIALISTS ENGINEER YOUR JOB!

...rental or sales

REX-SPANALL 730
The standard truss assembly for long-span and heavy-load formwork from 6′ 11″ to 29′ 7″.

REX-SPANALL VERTICAL SHORING
Easily handled telescopic shoring has precision adjustment for rapid setting. Available in three sizes from 5′ 7″ to 14′ 1″.

HERE IS YOUR REX® SPANALL DISTRIBUTOR:

ARKANSAS: Finke & Williams, Inc., Little Rock • CALIFORNIA: Burke Concrete Accessories, Inc., San Francisco, Los Angeles, Oakland, San Bernardino, San Diego, Sacramento • COLORADO: K. C. Construction Supply Co., Inc., Denver • CONNECTICUT: Universal Builders Supply Co., Inc., New York • WASHINGTON, D.C.: Spanall Of The Southeast, Inc., Alexandria, Va. • DELAWARE: Furnival Machinery Company, Philadelphia • FLORIDA: Southern Spanall, Inc., Fort Lauderdale, Winter Park • INDIANA: Moss Engineering Corporation, Fort Wayne; M. S. Churchman Co., Indianapolis; American Builders Supply Co., Louisville, Ky. • IOWA: Safway Steel Scaffolds of Omaha, Nebr. • KANSAS: Victor L. Phillips Co., Wichita • KENTUCKY: American Builders Supply Co., Louisville, Lexington • LOUISIANA: H. S. Finke Corporation, New Orleans • MAINE: Universal Builders Supply Co., Inc., Framingham, Mass. • MASSACHUSETTS: Universal Builders Supply Co., Inc., Framingham • MARYLAND: Spanall of the Southeast, Inc., Alexandria, Va. • MICHIGAN: Safway Steel Scaffolds, Inc., Detroit; Metal Building Specialties Co., Kalamazoo, Grand Rapids, Lansing • MINNESOTA: The Zeco Company, Minneapolis, Duluth, Hibbing • MISSOURI: Victor L. Phillips Co., Kansas City; Missouri Construction Machinery Co., St. Louis • NEBRASKA: Safway Steel Scaffolds of Omaha • NEVADA: Burke Concrete Accessories, Inc., San Francisco • NEW HAMPSHIRE: Universal Builders Supply Co., Inc., Framingham, Mass. • NEW JERSEY: Universal Builders Supply Co., Inc., New York; Furnival Machinery Company, Philadelphia • NEW MEXICO: K. C. Construction Supply Co., Denver, Colo.; Burke Concrete Accessories, Inc., Albuquerque • NEW YORK: Universal Builders Supply Co., Inc., New York, Syracuse • NORTH CAROLINA: Spanall of the Southeast, Inc., Durham • NORTH DAKOTA: Midwest Equipment Company, Bismarck, William O. Shirley Co., Fargo • OKLAHOMA: Victor L. Phillips Co., Oklahoma City, Tulsa • OHIO: Safway Steel Scaffolds, Inc., Cleveland, Toledo; E. W. Harman Company, Columbus; F. E. Longstreth Company, Dayton; Durbrow-Otte Associates, Inc., Cincinnati • OREGON: Burke Concrete Accessories, Inc., Portland • PENNSYLVANIA: Furnival Machinery Company, Philadelphia, Harrisburg, New Philadelphia; Dravo-Doyle Company, Pittsburgh • RHODE ISLAND: Universal Builders Supply Co., Inc., Framingham, Mass. • SOUTH CAROLINA: Spanall of the Southeast, Inc., Durham, N. C. • TENNESSEE: Finke & Williams, Inc., Memphis; Wilson-Weesner-Wilkinson Co., Inc., Nashville, Knoxville • TEXAS: Dixie Form and Steel Company, San Antonio • UTAH: K. C. Construction Supply Co., Denver, Colo. • VERMONT: Universal Builders Supply Co., Inc., Framingham, Mass. • VIRGINIA: Spanall of the Southeast, Inc., Alexandria • WASHINGTON: Burke Concrete Accessories, Inc., Seattle • WEST VIRGINIA: Safway Steel Scaffolds, Inc., South Charleston; Dravo-Doyle, Pittsburgh, Pa. • WISCONSIN: Hunter Machinery Company, Inc., Milwaukee, Green Bay, Eau Claire.

REX® SPANALL

Subsidiary of CHAIN Belt Company, Rex-Spanall, Inc., 6427 West Capitol Drive, Milwaukee 16, Wisconsin. Export: Rex-Spanall International, S.A., Santurce, Puerto Rico

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Lowell**—SCHOOL—BA 12/15—City, Comr. P. Wks., City Hall, South End Elementary School, South Common St. $2,175,200. M. A. Dyer Co., 24 School St., Boston, archts. CD 9/14.

HEAVY CONSTRUCTION—LB & CA

▲ **MAINE**—State Hy. Comn., Augusta,
Me.—**W. H. Hinman, Inc.,** 58 Main St., Westbrook, Me., CA **$760,769,** (6 bidders), grading, drainage and base project and two bridges 2.979 mi. Town of Newcastle, FAP F-026-1(12), Lincoln Co.;
Me.—**H. E. Sargent, Inc.,** Stillwater, Me., CA **$265,058,** (5 bidders), b. conc. road and widen. one bridge, town of Woolwich, FAP No. F-FG-026-1(11), Contr. 2, Sagadahoc Co.;
Me.—**Ross Constr. Co., Inc.,** Riverside Dr., Augusta, Me., CA **$172,203,** (6 bidders), b. conc. road 1.029 mi. Owls Head, FASP No. S 0196(1), Knox Co. Bids Oct. 26. Grand total $1,198,030. CD 10/11.

▲ **James Constr. Co., Inc.,** 14 Boylston Place, Brookline, Mass., CA **$1,118,000,** water filtration plant addn., appurtenances, GROTON, CONN. Borough of Groton, Sewer Authority, 359 Thames St., Groton, Conn. CD 9/27, under LB.

BUILDINGS—LB & CA

▲ **M. I. O'Connor, Inc.,** 604 Bridge Rd., Northampton, Mass., CA **$2,058,000,** est. $2,500,000, JUNIOR HIGH SCHOOL, West Silver St., WESTFIELD, MASS. City, 24 Broad St., Westfield, Mass. Bids Oct. 20, awarded Oct. 25. CD 10/24, under LB.

▲ **Edward Pacttor Co.,** 462 Silas Deane Hy., Wethersfield, LB **$1,718,712,** (9 bidders), Contract No. E 20-414, Fred D. Wish ELEMENTARY SCHOOL, HARTFORD, CONN. Town, Purch. Agt., 550 Main St., Hartford, Conn. CD 10/3.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **Md., Cheverly**—BOTTLING PLANT—BA 11/9—Pepsi-Cola Bottling Co., 901 E. 17 St. N.E., Wash., D. C., bottling plant. Chatelain, Gauger & Nolan, 1632 K St. N.W., Wash., D. C., archts. Previous bids rejected. LB **$1,054,000.** CD 2/4, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 10/27,
Ole Hansen & Son, Inc., Pleasantville, N. J., LB **$1,243,512,** (7 bidders), 1,628 ft. bridge to carry Roosevelt Blvd. over Horn Creek Thorofare, Upper Twp., Ocean City, Cape May Co. CD 9/30.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg, Bids opened Oct. 28,
Pa.—**Latrobe Rd. Constr. Co.,** P. O. Box 150, Latrobe, Pa., LB **$3,042,198,** separated hy. of rein.-con. 24 ft. wide each side divisor, 6 bridges, 17,306 ft., Interstate L.R. 1011(1), Turnpike feeder from Reading, Berks Co., CD 10/11;
Pa.—**Garlak Constr. Co.,** Box 44, Glenwillard, Pa., LB **$224,416,** cr. ag. base with bituminous surf. 22 ft. wide, 1 rein. con. arch bridge, 2,100 ft., T.R. 208, Venango Co.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Bero Constr. Corp., Box 70, Waterloo, N. Y., CA **$1,542,123,** divided hy. of c. con. pavement 24 ft. wide each side 60 ft. median area; 5 bridges, 6,015 ft. L.R. 790(2B), S. Abington Twp., Lackawanna Co. CD 9/21.

BUILDINGS—LB & CA

▲ **Beechcroft Towers,** c/o Jonathan Woodner Co., 75 Madison Ave., New York 22, N. Y., Owner Builds, **$16,000,000,** four 15 story Carlyle Towers COOPERATIVE APARTMENTS, 16 acres, Kissena Blvd. between Franklin and Elder Aves., FLUSHING, N. Y.
Lucarelli & Co., McCarter Hy., Newark, N. J., LB **$984,000,** DORMITORY, MADISON-FLORHAM PARK, N. J. Fairleigh Dickinson University, Madison Ave., Madison, N. J. Fellheimer & Wagner, 155 E. 42 St., New York, N. Y., archts. CD 8/12.

SOUTH

BUILDINGS—BA

▲ **Fla., Miami**—SCHOOL—BA 11/16—Dade Co. Bd. Public Instruction, 1410 N.E. 2nd Ave., Miami, Stoney Brook Junior High School. $1,100,000. Plans deposit $50. Watson & Deutschman, 141 N.E. 3rd Ave., Miami, Fla., archts. CD 5/7/58.

▲ **Ala., Huntsville**—SHOPPING CENTER—BA 11/17—Engert Corp., 1921 1st Ave. N., Birmingham, 24 story unit Heart of Huntsville Shopping Center, on Memorial Parkway. $1,500,000. CD 2/17.
Tenn., Bristol—ADMINISTRATION-LIBRARY—BA 11/22—Kings College, Bristol, adminstration-library bldg. $700,000. Bolthwell & Nash, 206 Roswell St., Marietta, Ga., archts. CD 10/20.

BUILDINGS—SLC

▲ **Ky., Owensboro** — OFFICE — Texas Gas Transmission Co., 3 and Locust Sts., soon lets contract 4 story, 150,000 sq. ft. office. $3,500,000. Skidmore, Owings & Merrill, 425 Park Ave., New York, N. Y., archts. Syska & Hennessy, 144 E. 39 St., New York, N. Y., mechanical engrs. Weiskopf & Pickworth, 2 W. 45 St., New York, N. Y., structural engrs. CD 10/13.

HEAVY CONSTRUCTION—LB & CA

▲ **WEST VIRGINIA**—State Rd. Comn., Charleston, Zone 5,
W. Va.—**Haynes Constr. Co. & Savage Constr. Co.,** P. O. Box 1497, Bluefield, W. Va., LB **$1,223,519,** (14 bidders), grading, draining, structures, 2.869 mi. from Mineral Wells to ¼ mi. southeast Parkersburg, and Bridge No. 2243 over Interstate 77 at Mineral Wells, Proj. I 77-3(27)172, Wood Co.;
W. Va.—**Paul Price,** 107 Harrison Court, Huntington, W. Va., LB **$134,896,** (5 bidders), grading, crush run base, cr. earth dam and causeway, 0.648 mi. Castlemen Run Rd., Sec. 32 and 53/4, Proj. 5824 and 7645, Brooke and Ohio Counties. CD 10/13.

▲ **S. J. Curry & Co.,** P. O. Box 1436, Albany, Ga., LB **$1,557,000,** sewage treatment plant imprvs., Contract D, ATLANTA, GA. City, City Hall, Atlanta, Ga. Wiedeman & Singleton, P. O. Box 1878, Atlanta, Ga., engrs. Bids Oct. 26. CD 10/5.

▲ **FLORIDA**—State Road Dpt., Tallahassee, Bids opened 10/25,
Fla.—**L. C. Morris, Inc.,** 2581 NW 72nd St., Miami 47, Fla., LB **$552,868,** (5 bidders), grading, limerock base Type 2 surface treatment, constructing 130-ft. bridge of concrete slab deck on steel pile bents, aluminum guard rail, State Proj., Job No. 03510-3601, SR S-951 from Old Marco Junction north approx. 2.834 mi. to SR 90 (US 41) incl. borrow ditch from Henderson Creek northeast to SR 90; constructing 105 ft. bridge of concrete slab deck on steel pile bents, aluminum guard rail, reinf. concrete approach slabs, Job No. 03010-3501, SR 90 (US 41) at proposed borrow ditch; grading, 10 x 5 ft. concrete box culvert, length 9.351 mi., Job No. 03510-3602, SR-951, from SR 90 (US 41) north approx. 6.517 mi. to SR S-858, including borrow ditch from SR 90 north approx. 1 mi. Collier Co.;
Fla.—**C. T. Stockton, Inc.,** Box 1235, Hialeah, Fla., LB **$760,970,** (9 bidders), grading, two-lane rural roadway, four-lane dual municipal roadway, two-lane municipal roadway sections of limerock base, Type 1 b. conc. surface course, sections of Type 1 b. conc. resurfacing, constructing four-lane Peace River Bridge 280 ft. long and two-lane Peace River Relief Bridge 560 ft. long, of concrete deck on prestressed beams and prestressed concrete pile bents, storm sewers and small drainage structures, length 6.506 mi. State Proj. Job No. 04040-3153, SR 70 from point west of Arcadia southeasterly to east limits of Arcadia, on Oak, Magnolia and Hickory Streets. DeSoto Co. CD 10/13.
▲ **Cone Bros. Contr. Co.,** P. O. Box 1259, Tampa, Fla., CA **$1,132,156,** sewage treatment plant, 6 lift stations, lines, PALMETTO, FLA. City, City Hall, Palmetto, Fla. Bids Oct. 11. CD 10/4.
▲ **ALABAMA**—State Hy. Dpt., Montgomery, Zone 4,
Ala.—**Clyde O. Mitchell, Contractor,** 2890 35th Ave., N., Birmingham, Ala., LB **$636,583,** grading, draining and bit. 9.068 mi. from near Winston County line N. W. toward Russellville, Franklin-Winston Co.;
Ala.—**A. E. Burgess Co., Inc.,** Pinson Hy., Birmingham, Ala., LB **$2,517,829,** base and concrete pavement 8.589 mi. from Argo N. E. to Ala. 23 on Inter Route 59, Jefferson-St. Clair Counties;
Ala.—**Hardaway Contr. Co.,** 15 E. 11th, Columbus, Ga., LB **$568,946,** base and bit. pavement 9.437 mi. on U. S. 78 from Pocahontas E. to Jasper urban limits, Walker Co. Bids Oct. 21. CD 10/7.
▲ **Sullivan, Long & Hagerty,** 801 5th Ave. N., Birmingham, Ala., LB **$1,686,072,** water filtration plant, Contract 1, BIRMINGHAM, ALA. Industrial Water Bd., City Hall, Birmingham, Ala. Bids Oct. 26. CD 10/17.
▲ **LOUISIANA**—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, Bids opened 10/26,
Southern Paving & Constr. Co., Box 1751, Baton Rouge, La., LB **$3,950,496,** c. conc. pavement, grade separation structures 5.606 mi. Lake Charles-Welsh Hy., US 181 East of Chloe, Rte. I-10, SP No. 450-02 25 FAP No. I 10-(24)33, Calcasieu Parish. CD 10/12.

BUILDINGS—LB & CA

▲ **Southeastern Constr. Co.,** 301 W. 2nd St., Charlotte, N. C., CA Est. **$1,250,000,** CONVENT-CHAPEL, BELMONT, N. C. Sacred Heart Junior College, N. Main St., Belmont, N. C. Walter Hook & Assocs., 303½ W. 4th St., Charlotte, N. C., archts.
▲ **International Constr. Corp.,** 3825 Henderson Blvd., Tampa, Fla., CA **$1,000,000,** APARTMENT, CLEARWATER, FLA. Clearview Towers Apartments, 3825 Henderson Blvd., Tampa, Fla.
▲ **Johnson, Drake & Piper, Cleveland Consolidated & Cleveland Electric Co.,** P.O. Box 5097, Jacksonville, Fla., CA **$2,472,759,** extension Talleyrand ELECTRIC GENERATING STATION, Sections A & B, JACKSONVILLE, FLA. City, City Hall, Jacksonville, Fla. Bids Oct. 18. CD 10/25.
▲ **Dan Watson,** 1167 Main St., Forest Park, Ga., Owner Builds, **$1,000,000,** 116 RESIDENCES, FOREST PARK, GA.
▲ **Curtis M. Hart,** 245 Hunt Rd., Alcoa, Tenn., Owner Builds, **$1,000,000,** 50 RESIDENCES, ALCOA, TENN.
▲ **Cassell Bros. Constr. Co.,** 908 E. Center St., Kingsport, Tenn., CA **$2,000,000,** 65,000 sq. ft. WAREHOUSE, KINGSPORT, TENN. (Kingsport Press, Inc., Kingsport, Tenn. CD 9/20.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲† **Michigan**—BA 12/1—U. S. Eng., P. O. Box 1027, Detroit, Zone 31, **First Stage, Poe Lock,** build cofferdams, east and west center piers, access bridge, etc. remove existing Poe Lock, St. Mary's River, Sault Ste. Marie, CIVENG-20-064-61-19. $11,000,000. CD 9/20.

BUILDINGS—BA

▲ **Wis., Madison**—GYMNASIUM—BA 12/1—University of Wisconsin, Madison, first section, gymnasium, $2,000,000. Plans deposit $50. Grassold, Johnson & Assocs., 734 N. Jefferson St., Milwaukee, Zone 2, archts. CD 8/21.

HEAVY CONSTRUCTION—LB & CA

▲† **Fred R. Combs, Inc.,** 2901 Aldrich Ave., Minneapolis, Minn., CA **$1,399,121,** concrete masonry, prefabricated metal buildings ammonia transfer and ground support facilities, K. I. Sawyer Air Force Base, Marquette, Mich. and Kincheloe Air Force Base, Mich., ENG-20-064-61-14, MICHIGAN. U. S. Eng., 1101 Washington Blvd., Detroit 31, Mich. Bids Oct. 21. CD 10/25, under LB.

BUILDINGS—LB & CA

▲ **Glazer & Marotta Co.,** Shaker and Warrensville Center Rds., Cleveland 22, O., Own Forces, **$1,800,000,** SHOPPING CENTER, Valleyview Rd., INDEPENDENCE, O.

▲ **C. & D Co.,** 3309 Belmont Ave., Youngstown, O. Owner Builds, Total est. **$9,500,000,** $1,500,000

(Continued on page 80)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England — **Middle West**
Middle Atlantic — **West of Mississippi**
South — **Far West**
PROPOSED WORK
Water Supply — **Public Buildings**
Sewers, Waste Disposal — **Mass Housing**
Bridges — **Commercial Buildings**
Streets & Roads — **Industrial Buildings**
Earthwork, Waterways — **Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

21 miles of plumbing

Averaging approximately 500 linear feet of pipeline each shift, a Marion 362 hoe is making child's play of a 6 ft. wide, 6 ft. deep drinking water pipeline in Oklahoma.

Over 189,000 cubic yards of earth, rock and sand will eventually be moved before the $1,372,000 project is completed in June, 1960. Big profit-making features such as famous Marionair control in combination with smooth, fast-acting clutches help keep cycle time to a minimum. Widely-spaced, non-clogging crawlers offer the best flotation ... provide best weight distribution for hefty lifts.

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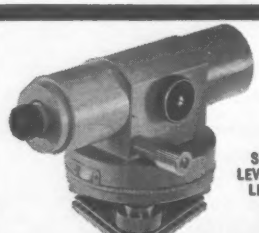
- ☐ 6½" Transits
- ☐ 5¼" Transits
- ☐ Theodolites
- ☐ 18" Levels
- ☐ Tilting Levels
- ☐ Rods, Tapes
- ☐ Plumb Bobs
- ☐ Planimeters
- ☐ Builder's Instruments



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(Continued from page 78)

first year, (5 to 6 year Program), 500 HOMES, Elm Grove Div., WARREN, O.

Chell & Anderson, 5425 N. Kedzie Ave., Chicago, Ill., CA **$717,100,** ELEMENTARY SCHOOL, Wilcox and Kostner Aves., CHICAGO, ILL. Bd. Educ., 228 N. LaSalle St., Chicago, Ill. Bids Oct. 3. CD 10/12, under LB.

▲ **Power Constr. Co.,** 125 S. Marion St., Oak Park, Ill., LB Est. **$2,000,000,** Quigley Preparatory SCHOOL, classrooms, gymnasium, swimming pool, chapel, CHICAGO, ILL. Catholic Bishop of Chicago, 719 N Wabash Ave., Chicago, Ill. CD 6/9.

▲ **S. M. Wilson & Co.,** 1616 Cleveland Ave., Granite City, Ill., LB **$1,644,230,** general contract 6 story, 200 bed HOSPITAL addn., Vermont St. between 14th and 16th Sts., QUINCY, ILL. St. Mary's Hospital, Vermont St., Quincy, Ill. Bids Oct. 4, CD 9/9;

Davis Constr. Co., 33 W. Hubbard St., Chicago, Ill., LB **$989,989,** plumbing, heating, ventilating, air-conditioning, and mechanical contracts for 6 story, 200 bed HOSPITAL addn. (Quincy, Ill.).

▲ **Charles Eichelkraut Constr. Co.,** Box 598, Ottawa, Ill., LB **$1,061,170,** HIGH SCHOOL addn., STREATOR, ILL. Bd. Educ., Streator Twp. High School Dist., Streator, Ill. Bradley & Bradley, 925 Main St., Rockford, Ill., archts. CD 1/5.

▲ **Bryant & Detwiler Co.,** 2110 Penobscot Bldg., Detroit 26, Mich., CA **$4,804,000,** 3 story, brick, stone, steel, concrete main LIBRARY addn., DETROIT, MICH. Detroit Library Comn., 5201 Woodward Ave., Detroit, Mich. Francis Keally, 17 East 49 St., New York 17, N. Y., archt. Awarded Oct. 18.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **Kansas**—BA 12/6—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., completion embankment, incl.. cleaning, grubbing, earth embankment, Pomona Dam and Reservoir, near 100 Mile Creek, ENG-23-028-61-28. $4,000,000. CD 9/20.

▲† **Texas**—BA 12/8—U. S. Eng., P.O. Box 1220, Galveston, dredging Morgan Point to vicinity Baytown, Houston Ship Channel, Harris Co., CIVENG-41-243-61-27, $2,500,000. CD 9/22.

BUILDINGS—BA

▲ **Iowa, Iowa City**—PHARMACY—BA 11/17—State Bd. Regents, Statehouse, Des Moines, 3 story, bsmnt. Pharmacy, University of Iowa, $1,500,000. Plans deposit $50. Woodburn & O'Neil, 201 Jewett Bldg., Des Moines, archts.

Mo., University City (St. Louis 30 P.O.)—SCHOOL—BA 11/17—Bd. Educ. School Dist., 6701 Delmar Blvd., Zone 30, Senior High School addn., alterations, incl. 4 story classroom wing, etc. Over $750,000. Extended date. Rathmann, Koelee & Carroll, 316 N. 8 St., St. Louis, Zone 1, archts. CD 10/6.

HEAVY CONSTRUCTION—LB & CA

▲ **Gjellefeld Assocs., Inc.,** Forest City, Iowa, CA **$1,033,706,** Section 1, Subdist. B, Indian Creek Sanitary Sewers, incl. 29,538 ft. 42 and 48 ft. concrete pipe in place, 84 manholes, CEDAR RAPIDS, IOWA, City, City Hall, Cedar Rapids, Iowa. Howard R. Green Co., Green Engineering Bldg., Cedar Rapids, Iowa, engr. Bids Oct. 20. CD 9/1/59.

Hennessey Bros., Inc., 4001 1st Ave. S.E., Cedar Rapids, Iowa, CA **$799,218,** Kaufmann Ave. and W. 17th St., storm sewer, DUBUQUE, IOWA. City, City Hall, Dubuque, Iowa. Bids Oct. 3. CD 9/21.

▲ **WYOMING**—State Hy. Comn., State Hy. Dpt. Office, Cheyenne,

Wyo.—**A. H. Read Co.,** 706 W. 19th St., Cheyenne, Wyo., CA **$573,216,** surf., other work 11.8 mi. interstate hy. between Gillette and Buffalo, Johnson and Campbell Counties. Bids Oct. 20. CD 10/25, under LB;

Wyo.—**Morrison-Knudsen Co.,** 319 Broadway Ave., Boise, Idaho, CA **$1,131,574,** grading, surf., other work 4.78 mi. Thermopolis-Shoshoni Hy., Hot Springs Co.

BUILDINGS—LB & CA

James Thompson & Son, 222 E. 3rd St., Ames, Iowa, LB **$855,200,** (6 bidders), general contract 3 story, partial bsmnt., 70x242 ft., air-conditioned, concrete frame, masonry CLASSROOM, Iowa State University, AMES, IOWA. Bd. Regents, Rm. 107, Beardshear Hall, Ames, Iowa. Bids Oct. 6. CD 9/26.

Bank Bldg. & Equipment Corp. of America, 1130 Hampton Ave., St. Louis 10, Mo., CA **$900,000,** design and construct 2 story CHANCERY OFFICE, Lindell Blvd. between Newstead and Taylor Aves., ST. LOUIS, MO. St. Louis Archdiocesan Bldg. Comn., 4396 Lindell Blvd., St. Louis 8, Mo.

▲ **Herring Lumber Co.,** P.O. Box 360, Laredo, Tex., CA **$750,000,** 108 room, 3 level, La Posada Motor HOTEL, and appurtenances, stucco exterior, concrete and wood framing, LAREDO, TEX. Pan-Tex Hotel Corp., P.O. Box 1525, Laredo, Tex. Wallace B. Thomas, 7007 San Pedro Ave., San Antonio, Tex., archt. Awarded Oct. 26. CD 10/4.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

UTAH—State Rd. Comn., State Capitol, Salt Lake City, Zone 4,

Strong Co., Springville, Utah, CA **$949,768,** 6.196 mi. gravel surf. road and 2 concrete and 2 steel bridges 1 mi. south of St. George to Arizona Line, Washington Co. Bids Oct. 11, awarded Oct. 24. CD 10/14, under LB.

▲† **Diversified Builders,** 6885 E. Rosecrans Ave., Paramount, Calif., **Kaiser Engrs.,** 300 Lakeside Dr., Oakland 12, Calif., and **Johnson Constr.,** Box 1574, Salt Lake City, Utah, LB **$11,862,000** for one type of production facilities, LB **$16,845,000** for second type to provide twice production of first (9 bidders), AIR FORCE PLANT B-5906-9-60-JIM Plant No. 78, for Minuteman Intercontinental Ballistic Missile Div. of Air Research & Development Command, BRIGHAM CITY, UTAH. Thiokol Chemical Corp., 64 N. Main St., Brigham City, Utah. Bids Oct. 25. CD 9/30.

BUILDINGS—LB & CA

M. J. Kuney, Box 4008, Station B, Spokane, Wash. CA **$985,650,** (10 bidders), general contract 2 story, 69 x 345 ft., 65 x 327 ft. and 65 x 263 ft. rein.-con. SCIENCE, CHENEY, WASH. Eastern Washington College of Education, Cheney, Wash. Bids Oct. 11. CD 10/17, under LB.

Tatkin Constr. Co., 2035 Westwood Blvd., Los Angeles, Calif., CA Est. **$900,000,** 80 bed masonry, steel frame HOSPITAL, SEATTLE, WASH., West Seattle General Hospital, 4704 California Ave., Seattle, Wash. William Smith, 2804 88th St., Everett, Wash., archts. CD 9/27.

▲† **Alcan Pecific Co.,** 1921 Stockton Blvd., Sacramento, Calif., CA **$7,778,560,** 500 units CAPEHART HOUSING, No. 3 ENG-60-38, FORT ORD, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Aug. 11. CD 8/22, under LB.

▲ **Del E. Webb Constr. Co.,** P. O. Box 4066, Phoenix, Ariz., and 1169 Market St., San Francisco, Calif., CA Est. **$3,000,000,** 15 story, 225-room MOTOR HOTEL, incl. restaurant, meeting and banquet rooms, patio, swimming pool, etc. Tulare St., FRESNO, CALIF. Del E. Webb, 1169 Market St., San Francisco, Calif., and Elizabeth Farrar, Milo E. Powell and Paul R. Bartlett, Fresno, Calif. Martin Stern, Jr., 8325 Wilshire Blvd., Beverly Hills, Calif., archt.

Lamon Constr. Co., 881 Market St., Yuba City, Calif., CA **$842,448,** 1 story, 48,361 sq. ft., steel frame, concrete block, wood roof Wheatland HIGH SCHOOL and GYMNASIUM, WHEATLAND, CALIF. Wheatland Union High School Dist., P. O. Box 398, Wheatland, Calif. Dreyfuss & Blackford, 2127 J St., Sacramento, Calif., archts. Bids Oct. 18. CD 9/30.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **QUEBEC**—Dpt. Hys. Parliament Bldgs., Quebec City, **H. J. O'Connell,** 6460 Cote de Liesse Rd., Dorvall, Que., CA Est. **$1,000,000,** scarifying, retopping 4.47 mi. Rte. 8, Lachute; widening Rte. 11 between St. Jerome and Lesage and resurf. road between St. Agenes and St. Jovite, St. Jerome.

BUILDINGS—LB & CA

▲ **Dominion Constr. Co., Ltd.,** 1017 111 St., Edmonton, Alta., LB Est. **$1,000,000,** SERVICE CENTER, JASPER PLACE, ALTA. R. Angus (Alberta) Ltd., 10419 96th St., Edmonton, Alta.

PUERTO RICO

BUILDINGS—LB & CA

▲ **HRH Constr. Co.,** 579 5 Ave., New York 17, N. Y., U.S.A., and **Rexach Constr. Co.,** Box 8175, Santurce, Puerto Rico, CA Est. **$4,000,000,** 14 story, 311 unit elliptical shaped APARTMENT, SAN JUAN, PUERTO RICO, El Monte Development Corp., San Juan, Puerto Rico. Reed, Basora & Menendez, Chase Manhattan Bank Bldg., Rio Piedras, Puerto Rico, archts. (**Correction**—HRH Constr. Co.'s address). CD 10/21.

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

▲ **Mich., Bloomfield Hills**—City, 45 E. Long Lake Rd., voted bonds Oct. 14, relief sewers, Bloomfield Hills. **$1,500,000.** Hubbell, Roth & Clark, Inc., 954 N. Hunter Ave., Birmingham, consult. engr. CD 7/28.

▲ **Mo., North Kansas City**—City, City Hall, voted bonds Oct. 11, sewer imprvs. **$7,443,000.** Haskins, Riddle & Sharp, 1009 Baltimore, Kansas City, Mo., consult. engrs. CD 10/18.

▲ **N. C., Salisbury**—City, City Hall, voted bonds Oct. 11, sewage treatment plant, **$1,570,000;** sewer lines, **$236,000.** Pierson & Whitman, 1618 Glenwood Ave., Raleigh, consult. engrs.

▲ **Pa., Pricedale**—Rostraver Township, Town Hall, sewage treatment plants, sanitary and intercepting sewers. **$2,062,762.** (**Correction**—project location.) CD 10/3, under Pa., Price.

▲ **Man., Winnipeg**—Greater Winnipeg Sanitary Dist., 455 Ellice St., sewage disposal plant between Waverley St. and hydro commission line, Fort Garry. **$4,000,000.**

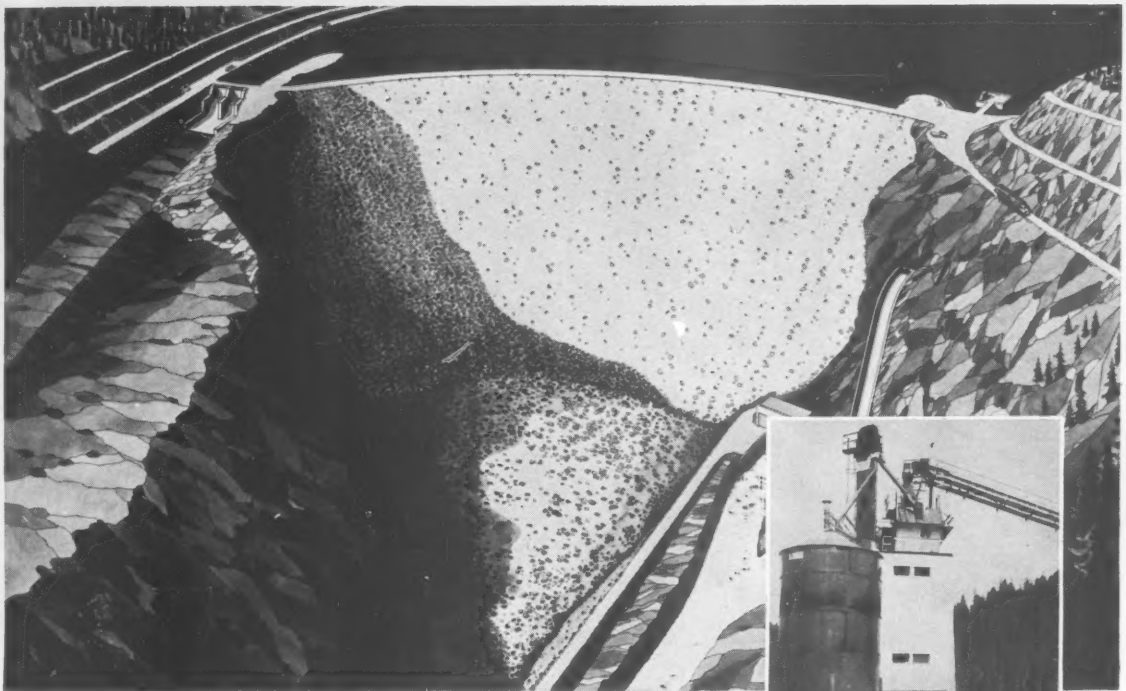
BRIDGES

▲ **Tex., Houston**—Harris County, Comrs. Court, Courthouse, bridge, across Ship channel, linking Penn City Rd. leading to US Hy. 90 on north, and Channel City Rd. leading to State Hy. 225 on the south, $12,000,000; bridge, across Cedar Bayou, linking Harris and Chambers Counties, **$1,000,000.** CD 7/7/53.

(Continued on page 84)

in high specification concrete mixing plant design, only ERIE gives you complete . . .

UNITIZATION



Located on the South Fork of the McKenzie River, near Blue River, Oregon, Cougar Dam is being built by Merritt-Chapman & Scott Corp. for the U. S. Army Corps of Engineers. It will be a rock-fill type embankment 1500 feet long, with a maximum height of 445 feet.

UNITIZED UP-160: Erie Plant used at Cougar Dam. Contractor: Merritt-Chapman & Scott Corp., New York City.

Across the Country Owners report Erie's Unitized High Specification Concrete Plants are erected in a fraction of the time it takes to set up a many-sided old style bin

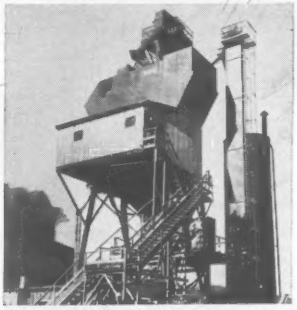
May we show you how much Erie Unitization can save you?

Unitized Batching Section with 7 individual weigh batchers, installed, completely wired and piped at the factory. Project requirements include: automatic batching control thru Erie Console with Multi-Mix Selection, Admixture and Mixer Controls, full interlocks, and 7-pen Erie Recorder.

UNITIZED Batching Section, Appalachian Power, Smith Mountain Dam, Rocky Mount, Va. Contractor: Sollitt Construction Co., Inc., South Bend, Ind.

ERIE STRAYER

CONCRETE PLANTS · CLAMSHELL BUCKETS

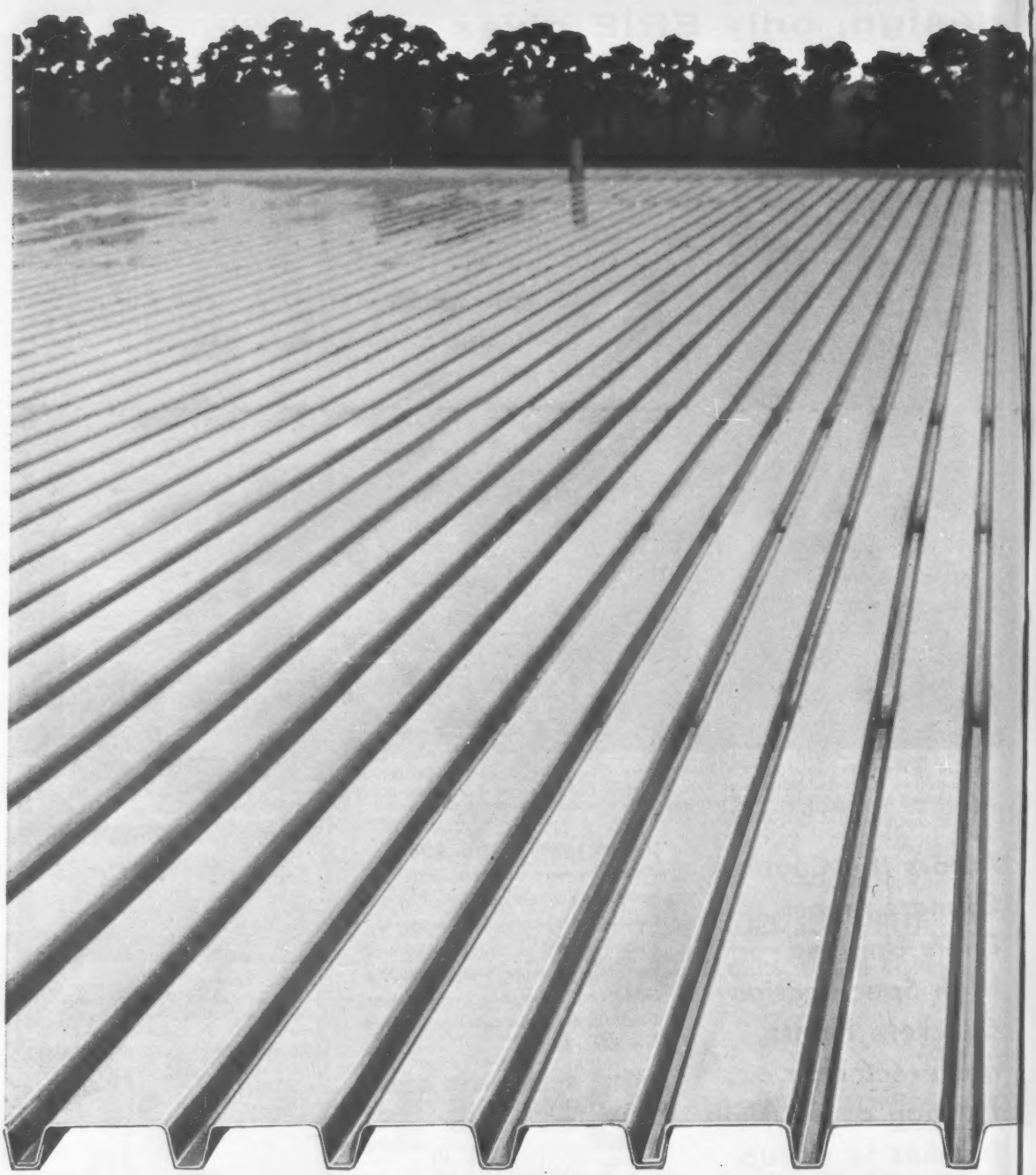


UNITIZED UP4-200: Erie Plant used at Kettle Creek Dam, Renova, Pa. Contractor: H. I. Lewis Construction Co., Middletown, Pa.

2110 RUDOLPH AVE., ERIE, PA.

NATION-WIDE SALES AND SERVICE

GRANCO



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ROOF DECK

ALL THE FEATURES YOU WANT... IN ONE PRODUCT

Let's be honest. Today, *all* brands of steel roof deck do a useful, high-quality job! *All* brands offer important benefits.

Isn't *your job*, then, to find the one product offering the most features?

This may help: Here's a list of Granco Steel Roof Deck features. Won't you check it over?... compare it with others? You'll see why so many architects and contractors specify Granco Roof Deck.

TOUGH FINISH—Flint-hard enamel, "flow coated" over cleaned, phosphate-coated steel deck, is baked on at 350° F. for 20 min. Rust-preventive finish resists scratches, prevents corrosion.

LONG SHEETS—up to 21′ 6″—permit long continuous spans, stronger construction.

STRONG—New sheet design provides greater strength and load-carrying capacity.

FAST PLACING—Sheets cover up to 43 sq. ft. Wide sheets mean fewer laps and welds.

YEAR-ROUND CONSTRUCTION—Place Granco Roof Deck in any weather that permits outdoor work.

SIMPLIFIED SYSTEM—Place and weld sheets to framing. Apply insulation. Add built-up roof. Fast!

EASY TO WELD—Wide rib openings speed plug welding from top side.

FIRE-RESISTANT SYSTEM—often means lower insurance rates.

FLARED END—means simplified nesting.

20-YEAR ROOF BONDS—obtainable on Granco Roof Deck with 1″ insulation board.

ATTRACTIVE—Underside of Granco Roof Deck creates striking "paneled" ceiling.

VERSATILE—Granco Roof Deck is ideal for panels, canopies, side walls, etc.

CHOICE OF GAGES—18, 20 and 22 gage meet wide range of span-load conditions.

ECONOMICAL—Structures designed for Granco Roof Deck often save 5¢ to 10¢ per sq. ft. in framing cost over heavier-type decks.

SEND FOR FREE ROOF DECK PRODUCT MANUAL ▶

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Just sign coupon... clip to your company letterhead... mail today. Address Department E-6011.

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OUR CATALOGS ARE FILED IN SWEET'S

(Continued from page 80)

▲ **WASHINGTON-OREGON**—Washington Toll Bridge Auth., Transportation Bldg., Olympia, Wash., bridge over Columbia River from point near Camas-Washougal area, Wash. to N.E. 122nd Ave., Portland, Ore. via Government Island. $5,000,000. Moffat, Nichol & Taylor, 1845 N.E. Couch St., Portland, Ore., consult. engrs. Constr. 1962. CD 2/15.

STREETS AND ROADS

▲ **CONNECTICUT**—State Hy. Dpt., 24 Wolcott Hill Rd, Wethersfield,
Norwich—reconstruct 0.8 mi. Hamilton Ave., Route 165, $300,000.
Preston—reconstruct Route 2, from Norwich Town Line to 0.4 mi. west of Route 164, $1,500,000.

EARTHWORK, WATERWAYS

▲ **Calif., Sacramento**—Sacramento—Yolo Port Dist., 4 and J Sts., docks, warehouses, transit sheds, barge facilities. $9,850,000. Will hold bond election in April.

AIRPORTS

▲† **Alaska, Cold Bay**—INSTRUMENT RUNWAY, etc.—Federal Aviation Agency, P.O. Box 440, Anchorage, extended instrument runway and parking and refueling apron. $1,687,000.

▲† **Ariz., Marble Canyon**—LONG RANGE RADAR—Federal Aviation Agency, 5651 Manchester Ave., Los Angeles, Calif., Long range radar to serve Phoenix Air Traffic Control Center. $2,400,000.

▲† **Ariz., Willcox** — LONG RANGE RADAR — Federal Aviation Agency, 5651 Manchester Ave., Los Angeles, Calif., Long range radar to serve Phoenix Air Traffic Control Center. $2,400,000.

▲† **Calif., El Centro**—LONG RANGE RADAR, etc.—Federal Aviation Agency, 5651 Manchester Ave., Los Angeles, Long range radar to serve Los Angeles and Phoenix Air Route Traffic Control Center, $2,400,000; Airport traffic control tower, $160,000.

▲† **Calif., Los Angeles**—TERMINAL AIR TRAFFIC CONTROL CENTER, etc.—Federal Aviation Agency, 5651 Manchester Ave., Los Angeles, terminal air traffic control center bldg., $1,900,000; instrument landing sys., $269,000.

▲† **Colo., La Plata** — LONG RANGE RADAR — Federal Aviation Agency, 5651 Manchester Ave., Los Angeles, Calif., Long range radar to serve Denver Air Traffic Control Center. $2,400,000.

▲† **D. C., Wash.**—TERMINAL AIR TRAFFIC CONTROL CENTER BLDG.—Federal Aviation Agency, International Airport, Jamaica, N. Y., terminal air traffic control center building. $1,900,000.

▲† **Fla., Miami**—TERMINAL AIR TRAFFIC CONTROL CENTER BLDG.—Federal Aviation Agency, P.O. Box 1689, Fort Worth, Tex., terminal air traffic control center building. $1,900,000.

▲† **Hawaii, Honolulu** — TRAFFIC CONTROL CENTER IMPRVS.—Federal Aviation Agency, P.O. Box 4009, Long range radar to serve Honolulu Air Traffic Control Center, Puu Manawahua. $2,400,000.

▲† **Idaho, Boise**—LONG RANGE RADAR—Federal Aviation Agency, 5651 Manchester Ave., Los Angeles, Calif., Long range radar to serve Seattle Air Route Traffic Control Center. $2,400,000.

▲† **La., New Orleans**—TERMINAL AIR TRAFFIC CONTROL CENTER—Federal Aviation Agency, P.O. Box 1689, Fort Worth, Tex., Terminal air traffic control center. $1,900,000.

▲† **Mass., Boston**—TERMINAL AIR TRAFFIC CONTROL CENTER—Federal Aviation Agency, International Airport, Jamaica, New York, Terminal air traffic control center. $1,900,000.

▲† **Mich., Detroit**—TERMINAL AIR TRAFFIC CONTROL CENTER—Federal Aviation Agency, 5825 Troost Ave., Kansas City, Mo., Terminal air traffic control center. $1,900,000.

▲† **Mo., St. Louis**—TERMINAL AIR TRAFFIC CONTROL CENTER, etc.—Federal Aviation Agency, 5825 Troost Ave., Kansas City, Mo., Terminal air traffic control center, $1,900,000; instrument landing sys., $269,000.

▲† **Mont., Dell**—LONG RANGE RADAR—Federal Aviation Agency, 5651 Manchester Ave., Los Angeles, Calif., Long range radar to serve Salt Lake City Air Route Traffic Control Center. $2,400,000.

▲† **N. M., Raton**—LONG RANGE RADAR—Federal Aviation Agency, 5651 Manchester Ave., Los Angeles, Calif., Long range radar to serve Albuquerque Air Traffic Control Center. $2,400,000.

▲† **N. Y., New York**—TERMINAL AIR TRAFFIC CONTROL CENTER BLDG.—Federal Aviation Agency, International Airport, Jamaica, New York, Terminal air traffic control center bldg. $1,900,000.

▲† **Okla., Oklahoma City**—LONG RANGE RADAR—Federal Aviation Agency, P.O. Box 1689, Fort Worth, Tex., Long range radar to serve Fort Worth Air Traffic Control Center. $2,400,000.

▲† **Tex., El Paso**—TERMINAL AIR TRAFFIC CONTROL CENTER—Federal Aviation Agency, P.O. Box 1689, Fort Worth, terminal air traffic control center. $1,900,000.

▲† **Wis., Rome (R. Sta. Sullivan)**—LONG RANGE RADAR—Federal Aviation Agency, 4825 Troost Ave., Kansas City, Mo., Long range radar to serve Chicago Air Traffic Control Center. $2,400,000.

▲† **Wyo., Cody**—LONG RANGE RADAR—Federal Aviation Agency, 5651 Manchester Ave., Los Angeles, Calif., Long range radar to serve Salt Lake City Air Route Traffic Control Center. $2,400,000.

UNCLASSIFIED

▲ **Ga., Savannah**—SWIMMING POOLS, etc.—City, City Hall, swimming pools, tennis courts, baseball diamonds, zoo, in Bacon Park. $2,000,000.

▲ **Miss., Gulfport**—PORT DEVELOPMENT—Harrison County Development Comn. and Bd. Supervs. Harrison Co., Court House, voted $5,500,000 bonds, First Phase, industrial canal and seaway. Bedell & Nelson, 840 Union St., New Orleans, La., consult. engrs. CD 5/25/59.

▲ **Montana and Wyoming**—Continental Line Co., Ponca City, Okla., 433 mi. crude oil pipe line from Cut Bank, Mont. to Byron, Wyo. $13,500,000.

▲ **Tex., Galveston**—PIER—Blue Water Fishing Pier Assn., c/o Ronald J. Fraser, 1st City Natl. Bank Bld., Houston, 1 mi. fishing pier, 30 ft. wide rein.-con. on concrete piling, $3,250,000.

▲ **Virgina and Maryland**—DISTRIBUTION LINES—Washington Gas Light Co. 1100 H St. N.W., Wash. D.C., 15.8 mi. 24 in. line from Hybla Valley, near Alexandria, Va. across Potomac River into Prince Georges Co., Md. and 0.3 mi. 16 in. pipe connecting two existing lines in Dist. of Columbia. Convert existing 5.36 mi. distribution line to transmission line. $3,830,000.

PUBLIC BUILDINGS

▲ **Ark., El Dorado**—SCHOOL—El Dorado School Dist., El Dorado, bond election Dec. 6, school construction, $3,000,000.

▲ **Calif., Pittsburg**—SCHOOLS—Pittsburg Unified School Dist., 2000 Railroad Ave., voted $3,000,000 bonds Oct. 18, schools.

▲ **Calif., Stockton**—COUNTY COURTHOUSE—San Joaquin Co., County Courthouse, voted bonds county courthouse. $5,500,000. Clowdsley & Whipple, 206 Exchange Bldg., and Mayo de Wolf & Assoc., 307 Exchange Bldg., archts. CD 4/18/58.

▲ **Calif., Stockton**—HOUSING—San Joaquin Co. Housing Auth., c/o Bissell & Eckland, archts., 41 N. Hunter St., 200 unit frame, stucco housing. $2,500,000. CD 12/12/56.

▲ **Colo., Lakewood**—HIGH SCHOOL—School Dist R-1, Jefferson County, 1580 Yarrow, plans by Alfred Watts Grant & Assocs., 1640 Court Place, Denver, Arvada Senior High School, West 63rd Ave. and Simms St., Arvada, $1,900,000. CD 6/10.

▲ **Ga., Atlanta**—PSYCHIATRIC TREATMENT CENTER—Ga. Dpt. Pub. Health, 12 Capitol Square, plans by Gregson & Assocs., Mortgage Guarantee Bldg. & A. Thomas Bradbury, 60 5th St. N. E., Psychiatric Treatment Center, Briarcliff Rd. N. E. $2,750,000.

▲ **Hawaii, Halawa**—FIREMEN TRAINING CENTER—City and Honolulu County, Punchbowl and King Sts., firemen training center. $10,558,000.

▲† **Hawaii, Honolulu**—EAST WEST CENTER—University of Hawaii, Honolulu, East-West Center for students of Asian Countries. $10,000,000 appropriated by U. S. State Department. Mario Ciampi, 85 San Pablo, San Francisco, Calif., consult. engrs.

▲ **Ill., Northbrook**—HIGH SCHOOL—Northfield Twp. High School Dist 225, 2300 Shermer Rd., voted bonds Oct. 22, Glenbrook South High School, Landwehr Rd and Lake Ave., $3,850,000. Nicol & Nicol, 23 E. Jackson Blvd., Chicago, Zone 4, archts. Bids in Spring, 1961.

▲ **Mass., Haverhill**—HIGH SCHOOL—City, City Hall, plans by Rich & Tucker Assoc., 45 Newbury St., Boston, high school, Primrose St. $4,000,000. Constr. 1961. CD 6/8.

▲ **Minn., Minneapolis**—HOUSING FOR ELDERLY—Minn. Housing Redevelopment Authority, 215 Public Health Center Bldg., housing for elderly, Site No. 11, between 8th and 9th Sts., from 12th Ave to 13th Ave. S, two towers, each 12 story, $1,760,000; Site Nos 70 and 71, between Franklin Ave. and 22nd St. from 16th to 18th Aves. three towers, each 12 story, $2,640,000; Site No. 75, between 22nd and 23rd Sts., from 14th Ave. to 15th, two towers, 8 story, $1,120,000. Constr. middle 1961. CD 10/15/56.

▲ **Minn., Robbinsdale**—SCHOOLS—Bd. Educ. Independent School Dist. No. 281, voted $3,900,000 bonds Oct. 18, schools. Bissell & Belair, 1111 Nicollet Ave., Minneapolis, archts. Constr. 1961.

▲ **Mont., Havre**—HIGH SCHOOL—School Dist. No. 16, Havre. high school, $1,932,375. Constr. 1962.

▲ **N. J., Bridgewater (Somerville P. O.)**—SCHOOLS—Bd. Educ. Bridgewater Twp., Washington School, Somerville, approved referendum Oct. 18, Fineeren school addn. $400,000; intermediate school, Brown Rd., Rte. 202, $1,500,000, Scrimenti Swackhammer & Perantoni, 295 W. Main St., Somerville, N. J., archts; Washington School addn. $400,000 Martinsville School addn. $500,000, Alex Merchant, 1 Elm Row, New Brunswick, N. J., archts. CD 9/21.

▲ **N. J., Matawan**—SCHOOL—Bd. Educ. Matawan Twp., High School, Broad St., voted bonds Oct. 18, Junior-Senior High School. $2,470,000. Finne Lyman & Finne, 1155 Magnolia Ave., Elizabeth, archts. CD 8/31.

▲† **N. J., Paterson**—POST OFFICE ADDN.—U. S. Post Office Dpt., 12 St. and Pennsylvania Ave. N. W., Wash., D. C., addn., alterations Post Office. $2,500,000.

▲ **N. Y., Huntington Station** — SCHOOLS — Bd. Educ. UFSD No. 13, 31 Walt Whitman Rd., voted bonds Oct. 8, Walt Whitman High School, $3,698,000; Birchwood Elementary School addn., $547,000; Maplewood Elementary School addn., $547,000. $4,792,000. James Van Alst, Main Rd., Centerport, archt.

▲ **N. Y., Jamestown**—COMMUNITY COLLEGE—Jamestown Community College, community college, Falconer St. $1,720,000. Bids Spring 1961. CD 12/15/55.

▲ **N. Y., Mineola** — CLASSROOM, etc. — Nassau Community College, c/o Frederic P. Wiedersum Assocs., archts., 65 Roosevelt Ave., Valley Stream, 80,000 sq. ft. classroom, offices, library, laboratories, 12 acres, Stewart and Post Aves., Salisbury Area. $3,000,000.

▲ **N. C., Raleigh**—LEGISLATIVE ASSEMBLY—State of North Carolina, Capitol Bldg., plans by Edward D. Stone, 28 W. 65th St., New York, N. Y., and Holloway & Reeves, 714 St. Marys St., Raleigh, legislative assembly. $5,000,000. CD 9/4/58.

▲ **Okla., Oklahoma City**—OFFICE—State Bd. Affairs, Main Admin. Bldg., plans by Bailey, Bozalis, Dickinson & Roloff, 3300 Liberty Bank Bldg., office, $4,500,000; plans by Hudgins, Thompson, Ball & Assocs., Classen Terrace Bldg., office, $4,750,000. CD 8/6.

▲ **Pa., Berwyn**—SCHOOL—Paoli Area Jt. School Dist., secondary school bldg., Proj. 834. $1,750,000.

▲ **Pa., Phila.** — CLASSROOMS, etc. — University of Phila., 3025 Walnut St., General Classroom Bldg. No. 2, $1,500,000; Physical Education Facilities, addns., $2,250,000. CD 10/14/46.

▲ **Pa., Pittsburgh**—SCIENCE FACILITY, etc.—University of Pittsburgh, 5th and Bigelow Blvd., Natural Science Facility, Unit 1, $2,000,000; Unit 2, $3,000,000; Unit 3, $3,500,000, CD 4/2/59; Physical Education Structure, Unit 1, $1,000,000, Unit 2, $1,250,000; Unit 3, $1,250,000; Physical Education Facilities, $4,500,000.

▲ **Tex., El Paso** — AUDITORIUM-CIVIC CENTER — El Paso Co., Courthouse, bond election Nov. 8, auditorium and civic center, P-Tx-3091, $5,500,000. CD 10/12.

▲ **Tex., Sweetwater**—SCHOOL—Sweetwater Ind. School Dist., high school. $1,750,000.

▲ **Tex., Temple** — SCHOOL — Temple Ind. School Dist. plans by Golemon & Rolfe, 5100 Travis St., Houston, masonry high school. $1,750,000. Golemon & Rolfe, 5100 Travis St., Houston, consult. engrs.

▲ **Va., Richmond**—CIVIC CENTER—City, City Hall, constr. city hall, civic center, $5,000,000; offices for Depts. of Safety, Health, Welfare, Clay St., $3,000,000. CD 10/27/59.

▲ **Va., Richmond**—OFFICES—Virginia Unemployment Compensation Comn., 7th and Main, plans by Carneal & Johnston, 603 W. Cary St., offices. Over $2,000,000. CD 1/22.

▲ **Wash., Pullman** — DORMITORY — Washington State University, 10 story men's dormitory, $2,250,000.

▲ **Wyo., Casper**—SCHOOLS—Natrona County School Dist. No. 2, $5,500,000 bond election Dec. 6, high school, Casper, high school, Midwest; Junior High School, and schools in Casper. CD 12/11/58.

COMMERCIAL BUILDINGS

▲ **Ala., Dothan**—SHOPPING CENTER—Porter Estate, 112 E. Main St., plans by Biggers & Neal, 102 Edgewood St., shopping center. $1,500,000.

▲ **Alaska, Anchorage**—OFFICE—Lathrop Co., Box 1540, Anchorage, Alaska, and Lease Co., Inc., 1501 N. 35 St., Seattle 3, Wash., build-lease 8 story, 100,000 sq. ft., steel frame office for General Services Administration. $2,000,000.

▲ **Calif., Bijou**—HOTEL—Heavenly Valley Corp., c/o H. L. Aynedter, archt., Box 394, Tahoe Valley, 280,000 sq. ft. Heavenly Valley Hotel, 2 swimming pools, steel. $1,500,000.

▲ **Conn., Hartford**—DEPARTMENT STORE—Constitution Plaza, Inc., 47 Prospect St., plans by Charles DuBose, 95 Woodland St., 160,000 sq. ft., department stores with off-street parking Constitution Plaza, East Side Redeevlopment Area, $1,600,000. Sasaki, Walker & Assocs., 133 Mt. Auburn St., Watertown, Mass., archts. CD 11/20/58.

▲ **Fla., Coral Gables**—LIBRARY—University of Miami, 1200 Campo Sano Ave., plans by Watson & Deutschman, 811 Chamber of Commerce Bldg., Miami, 3 and 7 story RIC library completion, air-conditioning. $2,000,000. CD 4/9/57.

▲ **Fla., St. Petersburg**—APARTMENT—Charles H. Netter, c/o Charles F. McKirahan, archt., 2400 E. Oakland Park Blvd., Fort Lauderdale, 10 story apartment. $1,500,000.

▲ **Ill., Chicago**—ADMINISTRATION—American College of Surgeons, 40 E. Erie St., 7 story administration bldg., Rush and Erie Sts. $3,000,000. Bids in Spring 1961.

▲ **Kan., Newton**—HOSPITAL—Bethel Deaconess Hospital Assoc., Bd. Dirs., hospital addn., remodeling. $1,536,500.

▲ **Ky., Louisville**—APARTMENTS—George Martin, R. J. Stewart, Gesse Bollinger and Harold Bomar, c/o Arrasmith & Tyler, archts. 501 Park Ave, Zone 8, 10 story apartment, Floyd and Gray Sts. $2,500,000.

▲ **Mass., Boston**—CLINIC—Massachusetts General Hospital, Fruit St., plans by Shepley, Bulfinch,

(Continued on page 86)

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No shifting or clutching required to back away from the truck and head for the bank! Hydraulically controlled direction reverser with big-capacity wet clutch saves effort, speeds cycles, helps increase daily yardage with the new John Deere TEN-TEN Crawler-Loader.

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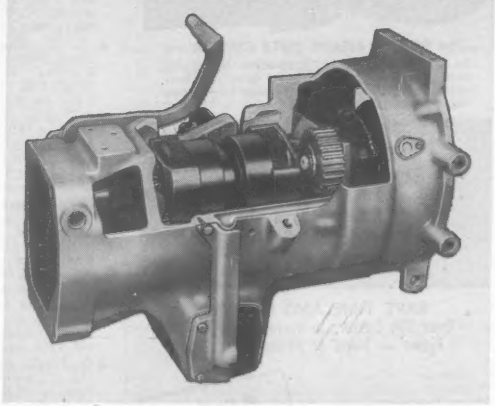

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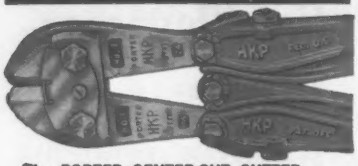

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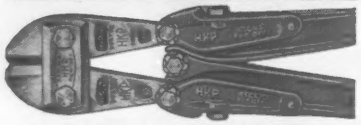

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(Continued from page 84)

Richardson & Abbott, 1 Court St., clinic. $7,000,000. CD 4/22.

▲ **Mass., Chelmsford**—SHOPPING CENTER—Owner, c/o Salisbury & LeBlanc, archts., 318 Harvard St., Brookline, shopping center, Old Westford and Parkhurst Rds. $2,500,000. Constr. Spring 1961.

▲ **N. J., Pennsauken** — MOTOR HOTEL, etc. — Penn Towne, Inc., 5509 Westfield Ave., plans by Faint & D'Anastasio, 5521 Westfield Ave., 6 story motor hotel, swimming pool. $3,000,000. Constr. 1961.

▲ **N. Y., Jackson Heights**—HOTEL—SIRE Plan, Inc., 115 Chambers St., New York, plans by Sirof & Siversten, 89-31 161 St., Jamaica, 7 story hotel, Ditmars Blvd. and Grand Central Parkway. $3,000,000. Ian Grad, 114 E. 32 St., New York, consult. engr.

▲ **N. Y., New York**—APARTMENTS—Arnold Paver Assocs., 163-18 Jamaica Ave., Jamaica, Zone 32, plans by Paul & Jarmul, 89-51 164 St., Jamaica, 20 story apartment, 1681-1689 Second Ave. and 12 story apartment, 245-47 E. 87 St., northwest corner, Total cost $2,000,000.

▲ **N. Y., New York**—APARTMENT—Chinatown Properties, Inc., c/o James Y. Typond, 40 Mott St., plans by Horace Ginsbern Assoc., 205 E. 42 St., Zone 17, 8 story 168 unit apartment 170 car garage, Bayard St. between Bowery and Elizabeth Sts. $2,400,000.

▲ **N. Y., New York**—OFFICE—Fisher Brothers, 6 E. 45 St., Zone 17, plans by Emery Roth & Sons, 400 Park Ave., Zone 22, 40 story office, east of 3 Ave. between E. 39 and E. 40 Sts. $22,000,000. James Ruderman, 32 Union Sq., Zone 3, structural engr. Consentini Assoc., 10 Columbus Circle, Zone 19, mechanical and electrical engrs. CD 6/17.

▲ **N. Y., New York**—APARTMENT—Frouge Constr. Co., Inc., 141 North Ave., Bridgeport, Conn., plans by Michael Pavia, c/o owner, apartment, Madison Ave. and East 58 St. $6,000,000.

▲ **N. Y., New York**—APARTMENT—Harry Horwitz, 565 Fifth Ave., 20 story apartment between West 54 and West 55 Sts. west side 8th Ave. $5,750,000.

▲ **N. Y., New York**—APARTMENT—201 East 79 St. Corp., 420 Lexington Ave., Zone 17, plans by John M. Kokkins, 420 Lexington Ave., Zone 17, 19 story, 21,455 sq. ft. apartment, penthouse, 3 Ave. between East 79 and East 80 Sts. $3,340,000. Faricas & Barron, 5 Beekman St., Zone 38, structural engrs. Sears & Kopf, 45 W. 45 St., Zone 36, mechanical engrs. CD 6/30.

▲ **N. Y., Vestal**—SHOPPING CENTER—Shopping Center, Inc., c/o Eastern Shopping Centers, Inc., Mall Walk, Yonkers, plans by Meyer & Kaisndorf, 1030 Chestnut St., Valley Stream, 170,000 sq. ft. shopping center, 16,000 car parking, 25 acre plot, Rte. 17 and Susquehanna River. $2,500,000.

▲ **N. Y., White Plains**—HOSPITAL ADDN.—Acrhdiocesan Bldg. Comn., 451 Madison Ave., New York, Zone 22, plans by Eggers & Higgins, 101 Park Ave., New York, Zone 17, 4 story 100-bed St. Agnes Hospital wing addn., and alterations to existing bldg., North St. $2,600,000. Syska & Hennessey, 144 E. 39 St., New York, Zone 16, mechanical engrs. Eipel Engineering, 101 Park Ave., New York, Zone 17, structural engrs. Bids Spring 1961.

▲ **N. C. Charlotte**—HEALTH SERVICE—Methodist Home, 3420 Shamrock Dr., plans by Louis H. Asbury & Assocs., 121 Brevard Court, Health Service Bldg. $1,525,000. S. J. Newton, 121 E. 3rd St., consult. engr. CD 4/27/60.

▲ **O., Akron**—HOME FOR AGED, etc.—Presbytery of Cleveland, Engineers Bldg., Cleveland, plans by Sanborn, Stekettee, Otis & Evans, L-O-F Bldg., Toledo, 50-bed Home for Aged, $600,000; 4 story apartment, $1,500,000; 50 unit apartment, $300,000, W. Market St., Putnam Rd., Mull Ave. CD 8/29.

▲ **O., Cincinnati**—OFFICE—Union Central Life Insurance Co., 5 W. 4th St., plans by Harley-Ellington-Day, Inc., 153 E. Elizabeth St., Detroit, Mich., and Cellarius & Hilmer, 4th and Main Sts., Cincinnati, 2 story, bsmnt., brick, stone office, Waycross and Mill Rd. $8,500,000. Bids in summer, 1961. CD 3/9.

▲ **O., Toledo**—POST OFFICE—U. S. Post Office Dpt., Pennsylvania Ave., between 12th and 13th Sts. N.W., Wash., D. C., build and lease 1 story, 131,000 sq. ft., air conditioned post office, Madison-Jackson, 10th and 12th Sts. $4,000,000.

▲ **O., Toledo**—HOSPITAL, etc.—Willys Diagnostic Clinic, 318 W. Woodruff Ave., 100-bed hospital, retirement home, nurses home, facilities. $5,000,000-$6,000,000. CD 8/15.

▲ **O., Twinsburg**—HOMES—Squires Constr. Co., 2224 Fairhill Rd., Cleveland, Zone 6, 300 homes near Reminderville. $4,800,000. Frank B. Krause, Jr., 17021 Broadway, Maple Heights, consult. engr. CD 2/16.

▲ **Pa., Pittsburgh**—OFFICE—Hospital Service Assoc. of Western Pennsylvania, Union Trust Bldg., Zone 19, 4 story, steel frame office and parking, Ft. Pittsburgh Blvd. and Smithfield Sts. $2,000,000.

▲ **Tex., Dallas**—APARMENT—Tishman Realty & Constr. Co., 666-5th Ave., New York, N. Y. plans by Victor Gruen Associates, 135 S. Doheny Dr., Beverly Hills, Calif., 25 story apartment, Olive and Bryan Sts. $3,750,000.

▲ **Tex., Galveston**—SANCTUARY, etc.—First Methodist Church, 1902 Sealy St., plans by Mark Lemmon, 3211 Southland Center, Dallas, Moody Memorial, sanctuary, chapel and educational, $1,500,000. CD 2/5/58.

▲ **Tex., Houston**—APARTMENT—Louis Cowan, Developer, c/o Gulf Oil Corp., 6955 Almeda, 14 story, luxury apartment, SW Houston, $2,400,000. Constr. 1961.

▲ **Tex., Houston**—MOTEL—APARTMENT—Bob Salter, Builder, 6702 Telephone Rd., plans by Lawrence D. Starnes, 2214 Maroneal St., 140 unit, Skylane Inn, motel and apartment, two swimming pools, 6800 Blk. Telephone Rd. $2,000,000.

▲ **Tex., San Antonio**—DWELLINGS—Tom McCreless, c/o De Verne Reed Kittles, archt., 250 Southill Rd., 175 dwellings, South Loop 13 and Hy. 281, $4,000,000.

▲ **Va., Richmond**—SHOPPING CENTER—Azalea Corp., 2 S. 5th St., plans by Carneal & Johnston, 603 W. Cary St., Azalea Mall Shopping Center. Over $5,000,000.

▲ **Va., Richmond**—APARTMENTS—Paul Gordon & Assocs., 5410 Wiliamsburg Rd, plans by Edward F. Sinnott, 112 E. Cary St., apartments, s. side of Westover Blvd. $2,500,000-$3,000,000. CD 3/23.

▲ **Va., Richmond**—CLASSROOMS—University of Richmond, Richmond, Life Science Classrooms, Over $2,000,000; Chemistry classrooms $500,000. CD 10/14.

▲ **Va., Richmond**—OFFICES—Presbyterian Bd. of Christian Educ., 6 N. 6th St., plans by Baskervil & Son, 2313 W. Cary St. offices, $1,500,000. CD 10/29/59.

▲ **Va., Roanoke**—HOSPITAL—Lewis Gale Hospital & Jefferson Hospital, 1313 Franklin St., plans by Hayes, Seay, Mattern & Mattern, 1615 Franklin Rd. S.W., hospital bldg. $8,000,000. CD 11/6.

▲ **Man., Winnipeg**—OFFICE—Allan T. Bass Ltd., 260-428 Portage Ave., 9 story office bldg., Portage Ave. $3,000,000.

▲ **Ont., Toronto**—OFFICE—Welport Investments Ltd., 21 King St. E., plans by Page & Steel, 72 St. Clair Ave. W., 20 story office, southwest corner King St. E. and Victoria St. $10,000,000. Farkas & Barron of Canada Ltd., 7 Adelaide St. E., consult. engr. Bids about December. CD 3/18.

INDUSTRIAL BUILDINGS

▲ **Ala., Cherokee** — CHEMICAL PLANT, etc. — Armour Chemical Co. (div. Armour & Co.), 401 N. Wabash, Chicago, Ill., agricultural chemical plant. $30,000,000.

▲ **Calif., Richmond**—DISTRIBUTION CENTER—Safeway Stores, Inc., 15 Ocean Ave., San Francisco, distribution center, Hoffman Blvd. $4,000,000. CD 10/7/54.

▲ **Neb., Omaha**—DISTRIBUTION ENTER—Western Electric Co., 195 Broadway, New York, N. Y., 1 story, 150,000 sq. ft. distribution center, 26 acres, 67 and F Sts. $2,000,000. Bids Spring 1961.

▲ **N. J., Bayonne**—REFINERY—Interamerican Refining Corp., 4 West 58 St., New York, N. Y., refinery. $2,500,000. Constr. 1961.

▲ **N. J., Jamesburg**—INDUSTRIAL PARK—J. Foster Abeel, Forsgate Country Club, plans by Wilbur S. Smith Asso., 495 Orange St., New Haven, Conn., industrial park, Rt. 130 and N. J. Turnpike, $2,000,000.

▲ **N. Y., Niagara Falls**—PLANT—Pyron Co., 175 53rd St., Iron powder plant near Porter and Packard Rds. $3,000,000.

▲ **O., Cincinnati** — PARKING GARAGES — Expressway Parking Co., 519 Main St., two 5 story parking garages, between Race, Vine and Main and Walnut Sts. $6,600,000.

▲ **O., Cleveland**—PLANT—Brush Beryllium Corp., 5209 Euclid Ave., Zone 3, 90,000 sq. ft. plant. $1,500,000. McGeorge-Hargett & Hoag, 7016 Euclid Ave., Cleveland, Zone 3, consult. engrs. CD 10/19.

▲ **Tex., Bishop**—PLANT—Celanese Corp. of America, 180 Madison Ave., New York, N. Y., butylene and glycol chemical plant. $4,500,000. Constr. In November or December. CD 2/8/57.

▲ **Que., Oka** — PLANT — St. Lawrence Columbium & Metals Corp., 159 Craig St. W., plans by owners staff under Paul E. Riverin, Dpt. Mining, University of Montreal, open pit ore concentrates producing plant from columbium deposits at Oka, near Montreal. $2,000,000. Galigher Co., 545 W. 8th St., Salt Lake City, U.S.A., mining engrs. CD 1/13/59.

U. S. POSSESSIONS

▲† **Guam, Mariana Islands**—LONG RANGE RADAR—Federal Aviation Agency, P. O. Box 4009, Honolulu, Hawaii, long range radar to serve Guam Air Traffic Control Center. $2,400,000.

PUERTO RICO

▲ **Puerto Rico**—HOTEL ADDN.—Condado Beach Hotel Corp., 1071 Ashford Ave., San Juan, plans by SAGMAC of Puerto Rico, Cervantes 55, Santurce, Puerto Rico, 8 story Condado Beach hotel addn. $2,000,000.

▲ **Puerto Rico, San Juan**—DORMITORIES—Puerto Rico Dpt. Health, San Juan, 6-8 story dormitories for 665 nurses and interns, Puerto Rico Medical Center. $2,700,000.

▲ **Puerto Rico, San Juan**—DEPARTMENT STORE—Sears, Roebuck & Co., 824-925 S. Homan Ave., Chicago, Ill., plans by Weed-Johnson Assocs., 550 Brickell Ave., Miami, Fla., U. S. A., department store, $1,500,000. H. J. Ross & Assocs., 1735 Biscayne Blvd., Miami, Fla., U. S. A., engrs.

LATIN AMERICA

▲ **MEXICO**—Federal Hy. Admin. of Ministry of P. Wks., Mexico City,
2,000 mi. building or improving roads. $68,600,000. World Bank Loan-$25,000,000.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 16 Maine
STREETS AND ROADS
November 21 Connecticut

BUILDINGS—BA

Conn., **Westport**—SCHOOL—BA 11/14—Town, Pub. Constr. Com., Town School Office, Jesup Rd., wood, stone Hillspoint Elementary School, Hillspoint Rd. $700,000. Plans deposit $50. Extended date. Victor A. Lundy, 6 E. 65 St., New York, N. Y., archt. Severud, Elstad, Krieger, 415 Lexington Ave., New York, N. Y., engrs. CD 10/12.

HEAVY CONSTRUCTION—LB & CA

E. L. Wagner & Co., 554 Post Road, Darien, Conn., CA $900,000, swimming pool, Woodway Rd., DARIEN, CONN. Woodway Country Club, Inc., 412 Hoyt St., Darien, Conn. CD 10/13.

BUILDINGS—LB & CA

Reznick Constr. Co., Inc., 303 Freeport St., Dorchester, Mass., CA Approx. $900,000, 2 STORES, site work, BURLINGTON, MASS. First National Stores, Inc., 5 Middlesex Ave., Somerville, Mass. Sumner Schein, 271 Huntington Ave., Boston, Mass., archts.

▲ **George A. Fuller Co.**, 75 W. 49 St. New York, N. Y., CA $2,000,000, 200,000 sq. ft. OFFICE, Cottage Grove Rd., BLOOMFIELD, CONN. Emhart Mfg. Co., 333 Homestead Ave., Hartford, Conn. Skidmore, Owings & Merrill, 425 Park Ave., New York, N. Y., archts. Awarded Oct. 29. CD 8/24.

▲ **Jerome C. Kelter, Jr.**, 1007 Farmington Ave., West Hartford, Conn., CA $1,200,000, 12 story, T-shaped, 240 unit APARTMENT, 31 Woodland, HARTFORD, CONN. 31 Woodland St. Corp., 1007 Farmington Ave., West Hartford, Conn. awarded Oct. 29. CD 10/25.

▲ **F. H. McGraw & Co.**, 780 Windsor St., Hartford, Conn., CA $1,312,500, PARKING GARAGE, Constitution Plaza, HARTFORD, CONN. Constitution Plaza, 47 Prospect St., Hartford, Conn. Awarded Oct. 31. CD 9/21.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
November 18 Pennsylvania December 9 New York
STREETS AND ROADS
November 15 Maryland November 18 Pennsylvania
November 23 New Jersey December 9 New York

▲ **N. Y., Mineola**—BA 11/29—County of Nassau, Old County Court House, Franklin Ave., Contr. 1002-2-AW-3, lateral sewers, Albertson, Searingtown and vicinity, Albertson. $4,303,720. Plans deposit $25.

▲ **New York and New Jersey**—BA 12/8—at office Ch. Engr. of Port of New York Auth., Rm. 1100, 111 Eighth Ave., New York 11, N. Y., New Jersey approach Phase 6, alterations to George Washington Bridge Toll Plaza at connection between bridge and Palisades Interstate Parkway, Fort Lee Boro, N. J., Contr. GWB-190.029. Plans deposit $50. CD 8/15/57.

BUILDINGS—BA

▲ **D. C., Wash.**—SCHOOL—BA 11/29—Regional Office Bldg., Room No. 7122, 7th and D Sts. S.W., Zone 25, Kendall School, etc., one story school building with gymnasium and two story domitory wings, Gallaudet College, Appr. No. 47-759/00633, Proj. No. 49264, Contr. No. GS-R3-B-8036, CD 9/30/59.

BUILDINGS—SLC

▲ **Pa., Chambersburg**—PLANT—Marathon Can Co., Marathon Div., Menasha, Wis., (Div. of American Can Co., 100 Park Ave., New York, N. Y.), soon lets contract, 145,000 sq. ft. food packing materials plant. $1,000,000. CD 10/11.

HEAVY CONSTRUCTION—LB & CA

▲ **George Tripp, Inc.**, 3260 Elizabeth Lake Rd., Pontiac, Mich., LB $1,393,924, est. $1,284,005 (3 bidders), Gates-Chili-Ogden Sewer Dist. Section K-1, 15 mi. 8 to 24 in. sewer; LB $811,423, est. $709,810, (7 bidders), Gates-Chili-Ogden Sewer Dist., Section K-2 10 mi. 8- to 15-in. sewers; LB $1,245,591 est. $1,131,360, (4 bidders), Gates-Chili-Ogden Sewer Dist., Section E-2, 15.2 mi. 8- to 20-in. sanitary sewer, ROCHESTER, N. Y. Monroe County Sewer Agency, 65 Broad St., Rochester, N. Y. Bids Oct. 31 CD 10/18.

▲ **MARYLAND**—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3,
Lycoming Constr. Co., Williamsport, Pa., CA $1,828,024 grade, drain, surf. 2.7 mi. Baltimore Beltway and southbound lane of Jones Falls Expressway incl. steel beam bridges near Baltimore. B-635-29-99-420- B-635-29-75-76-77-78-415, Baltimore Co. Bids Oct. 4. CD 10/10, under LB.

MARYLAND—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3,
A. A. Dyer Co., Reisterstown, Md., CA $796,596, one 4 span and one 5 span steel beam bridges on Old Court Rd. over Baltimore Beltway, incl. grading, drainage and paving 1.009 mi. near Pikesville, B 635-93-420, Baltimore Co. Bids Oct. 11. CD 10/19, under LB.

▲ **MARYLAND**—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3, Bids opened 10/25,
Wright Contg. Co. Odenton, Md., LB $1,182,861 grading, surf. and storm sewer 2.484 mi. Md., 93, Wheaton to Four Corners. M-517-4-320, Montgomery Co. CD 10/12.

▲ **Blount Brothers Constr. Co.**, 79 Commerce St., Montgomery Ala., LB $4,112,190, (7 bidders), Southwest Freeway Inner Loop, Center Leg Connection, railroad structures and roadways, WASH., D. C. D. C. Govt. Hy. Dpt., 499 Pennsylvania Ave. N. W., Wash. D. C. Gannett, Fleming, CD 9/28.

BUILDINGS—LB & CA

▲ **Planet Constr. Corp.**, 11 W. 42 St., New York 36, N. Y., CA $1,027,000, general contract modernization PUBLIC SCHOOL 236, Avenue U between E. 63 St. and E. 64 St., Brooklyn Boro, BROOKLYN, N. Y. Deputy Supt. Schools, Bureau Constr., 4 Floor, 42-15 Crescent St., Long Island City 1, N. Y. Bids Oct. 14, awarded Oct. 31. CD 10/18, under LB.

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 1, N. Y., CA $3,060,000 combined PUBLIC SCHOOL 304, Sumner Ave. between Pulaski and Hart Sts. and PUBLIC SCHOOL 305, Monroe St. between Marcy and Tompkins Aves., Brooklyn Boro, BROOKLYN, N. Y. Deputy Supt. of Schools, Bureau Constr., 4 Floor, 42-15 Crescent St., Long Island City 1, N. Y. Bids Oct. 21, awarded Oct. 31. CD 10/27, under LB.

▲ **Diesel Constr. Co.**, 24 W. 58 St., New York 19, N. Y., CA $18,000,000, 30 story, 400,000 sq. ft. 125 x 200 ft. OFFICE, Bankers Trust Bldg., west of Park Ave. between 48 and 49 Sts., NEW YORK, N. Y. David Rose & Assocs., 340 W. 58 St., New York 19, N. Y. Emery Roth & Sons, 575 Madison Ave., New York 22, N. Y., archts. Shreve, Lamb & Harmon, 11 W. 44 St., New York 36, N. Y., assoc. archts. James Ruderman, 32 Union Square, New York 3, N. Y., structural engr. Jaros, Baum & Bolles, 415 Lexington Ave., New York 17, N. Y., mechanical engrs. Weiskopf & Pickworth, 230 Park Ave., New York 17, N. Y., structural consult. engrs. CD 4/13, under CA.

▲ **Millard Shroder, Inc.**, 441 Lexington Ave., New York 17, N. Y., CA Est. $1,850,000, 16 story APARTMENT, 1294 Lexington Ave., NEW YORK, N. Y. Julius H. Sherry, 10 Beech Lane, Great Neck, N. Y. CD 8/17.

▲ **Planet Constr. Corp.**, 11 W. 42 St., New York 36, N. Y., CA $1,389,000, general contract modernization PUBLIC SCHOOL 30 addn., 141 St. and Brook Ave., Bronx Boro, NEW YORK, N. Y. Supt. Design, Constr & Physical Plant, Bureau Constr., 4 Floor, 42-15 Crescent St., Long Island City 1, N. Y. Bids Sept. 20, awarded Oct. 31. CD 9/22, under LB.

Uman Constr. Corp., 10 West Merrick Rd., Freeport, N. Y., LB $980,000, general contract Dogwood and Mount Pleasant ELEMENTARY SCHOOL, SMITHTOWN, N. Y. Bd. Educ. Central School Dist. 1, 21 Oak Ave., Smithtown, N. Y. Bids Oct. 27. CD 10/21.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa., CA Est. $6,300,000, lease and build POST OFFICE, HARRISBURG, PA. U. S. Post Office Dpt., 12th St. and Pennsylvania Ave. N.W., Wash., D. C. CD 10/7.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 15 South Carolina, West Virginia
November 18 Kentucky
November 22 Mississippi, North Carolina
STREETS AND ROADS
November 15 South Carolina, West Virginia
November 18 Kentucky
November 22 Mississippi, North Carolina

▲ **Ga., Cartersville**—Bids Asked—Bartow County Hospital Auth., at Medical Health Center, Cartersville, Bartow Memorial Hospital, Project GA. 261, Gregson & Assocs., Mortgage Guarantee Bldg., Atlanta, Zone 3, archts. CD 10/24, under LB.

BUILDINGS—BA

▲ **Miss., Jackson**—OFFICE—BA 11/15—First Federal Savings & Loan Assn., 204 South State St., 8 story rein.-con., frame, marble and granite etc. office. $1,800,000. Plans deposit $50. R. W. Naef & Assoc., 350 North Mart Plaza and P. O. Box 2008, Jackson, Miss., archts.

▲ **Ala., Auburn**—LIBRARY—BA 12/1—Auburn University, Auburn, 4 story, 170,000 sq. ft., library, $2,000,000. Plans deposit $40. Extended date, Van Keuren, Davis & Co., 3004 7th Ave., S., Birmingham, archts. CD 10/25.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Dpt. Hys., 1221 E. Broad St., Richmond, **Tidewater Constr. Corp.**, Military Hys. and Ind River Rd., Norfolk, Va., CA $1,295,528, bridge over southern branch Elizabeth River on Rte. 166, Proj. 0166-064-002, C501, B601, Norfolk Co. Bids Oct. 26. CD 10/31, under LB.

▲ **Latex Constr. Co.**, 4959 S. Peachtree Rd., Atlanta, Ga. CA $2,500,000 gas transmission lines, NORFOLK, VA. Virginia Electric & Power Co., 700 E. Franklin St., Richmond, Va. CD 3/17.

▲ **Norfolk Southern Railway Co.**, Terminal Bldg., Norfolk, Va., Owner Builds $2,000,000, replacing bridge, Albemarle Sound, Chowan-Washington Counties, NORTH CAROLINA. CD 6/8.

▲† **Alpha of Texas, Inc.**, Richardson, Tex., and **Continental Electronics Mfg. Co.**, 4212 S. Bruckner Blvd., Dallas, Tex. LB $12,173,000, (13 bidders), complex short wave transmitter facility, GREENVILLE, N. C. U. S. Information Agency, 1734 New York Ave. N. W., Wash., D. C. Bids Nov. 1. CD 7/12.

▲ **Republic Contg Co.**, P. O. Box 5264, Columbia, S. C., LB $990,628, Division 1, sewage treatment plant, ATHENS, GA., City, City Hall, Athens, Ga., Bids Oct. 25, CD 9/21;
Terry Constr. Co., Inc., P. O. Box 3335, Greenville, S. C. LB $316,129 (concrete pipe) Division 2, sanitary sewer lines, (Athens, Ga.)

FLORIDA—State Rd. Dpt., Tallahassee,
L. & A. Contg Co., Box 1651, Hattiesburg, Miss., CA $941,895, three single roadway bridges, approx. 760 ft. concrete deck and prestressed beams on concrete piers founded on prestressed concrete piling; four dual roadway bridges approx. 1,093.5 ft. and 222 ft. single roadway bridge of concrete deck and prestressed concrete beams on prestressed concrete pile bents; and 340 ft. dual roadway bridge of concrete deck and prestressed concrete beams on steel pile bents; aluminum handrail, approx. 0.271 mi. Federal Aid Interstate Proj. No. I-75-3(11)181 (Jobs Nos. 37130-3403 and 32100-3414) SR 93, between relief bridge south of Suwannee River and SR 6, Suwannee and Hamilton Counties. CD 10/5, under LB.

† **Green Constr. Co.**, Oaktown, Ind., LB $756,535, constructing Canal 25, Section 2, St. Lucie County, west of Fort Pierce, Central & Southern Florida Flood Control Project, CIVENG-08-123-61-19, FLORIDA. U. S. Eng., Box 4970, Jacksonville, Fla. Bids Oct. 26, CD 10/3.

▲† **Pearce & Gresham Co.**, P. O. Box 1708, Decatur, Ala., CA $1,817,154, addn. to missile assembly shop, ENG-01-076-61-10B; CA $517,512, addn. to missile assembly and inspection hangar, ENG-01-076-61-11B, Marshall Space Flight Center, HUNTSVILLE, ALA., U. S. Eng., 2301 Grant St., Mobile, Ala. Bids Oct. 26, CD 11/1, under LB.

▲ **LOUISIANA**—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, Bids opened 10/26,
La.—**Hall & Holland, Inc.**, Montgomery, La., LB $1,443,055, bridge approaches and approach spans for Red River Bridge at Alexandria (Alexandria-Pineville Expressway), Rte. LA 3026, SP No. 23-01-08 FAP No. U-415(6), Rapides Parish,
La.—**Graybar Electric Co., Inc.**, 7676 Airline Hy., Baton Rouge, La., LB $90,000, Intracoastal Canal Bridge (Houma), Rte. LA 659, SP No. 855-04-23, Contr. 1, FAP No. HPS-1(16), Terrebonne Parish. CD 10/12.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort,
Ralph E. Mill, 410 Ann St., Frankfort, Ky. and **Talbott Constr. Co.**, 20 Wall St., Winchester, Ky., CA $1,717,479, b. conc. Class I surf. 3.093 mi. Covington-Lexington-Tennessee State Line Rd. from Ky. 388 to south end of Clays Ferry Bridge, I-7504(4)95, SP 76-831, Madison Co. Bids Oct. 14, awarded Oct. 24. CD 10/18, under LB.

BUILDINGS—LB & CA

▲ **Raymond Concrete Pile Co. Div. of Raymond International, Inc.**, 140 Cedar St., New York 6, N. Y., Owner Builds. $2,000,000, PLANT, to make precast concrete, CAPE CHARLES, VA.

▲ **Roberts & Schaefer Co.**, 201 N. Wells St., Chicago, Ill., CA Total est. $10,000,000-$12,000,000 coal cleaning and preparation PLANT, GRANT TOWN, W. VA. Eastern Gas & Fuel Assocs., Koppers Bldg., Pittsburgh, Pa. CD 2/16.

Knollwood Homes, 602 Healey Bldg., Atlanta, Ga., Owner Builds, $900,000, 90 RESIDENCES, Rodchester subdivision, ATLANTA, GA.

General Builders Corp., 906 2nd Ave. S., Nashville, Tenn., LB $959,000, Central High SCHOOL, COLUMBIA, TENN. Maury Co. Bd. Educ., Columbia, Tenn. Bids Oct. 25. CD 10/13.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 16 Michigan November 18 Illinois
STREETS AND ROADS
November 16 Michigan November 18 Illinois

▲ **Ill., Chicago**—ROADWAY—BA 11/21—Dpt. Purchases, City Hall, Zone 2, No. 80.85-60-131, elevated roadway Chicago O'Hare International Airport, RB 34, Park Ridge. $3,370,000. Naess & Murphy, 224 S. Michigan Ave., Zone 4, engrs. CD 10/21.

▲† **Ill., Rantoul**—FAOILITIES—BA 11/25—U. S. Eng., 536 S. Clark St., Chicago, modifying Facilities Bldg. P 12, Chanute Air Force Base, ENG-11-032-61-25B, $1,000,000. Plans deposit $10. CD 10/26.

HEAVY CONSTRUCTION—LB & CA

▲ **Square & Marra Constr Co.**, 5101 Praha Ave., Cleveland, O., CA **$2,200,701**, sewerage system Phase B-Red Run diversion conduit, WARREN, O. City, City Hall, Warren, O. Bids Oct. 7, awarded Oct. 28. CD 10/18, under LB.
Christopher Constr. Co., 3150 Valleyview Dr., Columbus, O., CA **$2,441,288**, sewerage system, Phase C-Mahoning Interceptor Sewer (Warren, O.).

▲ **Consolidated Constr. Co.**, 221 N. LaSalle St., Chicago 1, Ill., CA **$1,122,145**, Est. $1,400,000, combined sewers, Leffin St. system, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Aug. 23, awarded Oct. 27. CD 8/26, under LB.

▲ **Thomas M. Madden Co.**, 4610 W. Van Buren St., Chicago 44, Ill., CA **$1,250,570**, 2425-cs, Spec. 80.68-60-6, Western Belmont overpass, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Sept. 16, awarded Oct. 22. CD 9/22, under LB.

▲ **George D. Hardin, Inc.**, 2130 S. Michigan Ave., Chicago, Ill., CA **$1,038,279**, sanitary sewerage system TINLEY PARK, ILL. Village, Village Hall, Tinley Park, Ill. Walter Wilson & Assocs., 105 W. Madison St., Chicago 2, Ill., engrs. CD 1/14/47.

BUILDINGS—LB & CA

▲ **Knowlton Constr. Co.**, 1133 W. Columbus St., Bellefontaine, O., CA Est **$2,000,000**, SHOPPING CENTER, Chambersburg Rd. and Brandt Park, DAYTON, O. Huber Homes, Inc., 5150 Fishburg Rd., Dayton, O. CD 8/29/50.

▲ **A. Visconsi & Assocs.**, 6867 Pearl Rd., Cleveland 30, O., CA Est. **$1,000,000**, 60,000 sq. ft. WESTGATE SHOPPING CENTER, FAIRVIEW PARK (BR. CLEVELAND) O. Connecticut General Life Insurance Co., 900 Cottage Grove Rd., Bloomfield, Conn. Grosel & Jencen, The Arcade, Cleveland 14, O., archts. Federal Dept. Stores, lessee.

▲ **Wargo Realty Co.**, 9219 Miles Ave., Cleveland 5, O. Owner Builds, **$5,700,000**, 190 HOMES, Brandywine Estates, NORTHFIELD, O. CD 7/25.

▲† **F. D. Rich Co.**, 550 Summer St., Stamford, Conn., CA **$4,044,700**, FEDERAL OFFICE, TOLEDO, O. General Services Admin., 319 S. Clark St., Chicago, Ill. Bids Oct. 6. CD 10/10, under LB.

▲ **Howells Prosser, Inc.**, 5031 Broadway, Gary, Ind., LB **$1,147,000**, general contract Div. A-Kuny ELEMENTARY SCHOOL, 50th and Georgia Sts., Brunswick ELEMENTARY SCHOOL, 7th and Gerry Sts., GARY, IND. School City of Gary, 620 E. 10th Pl., Gary, Ind. Bids Oct. 25. CD 10/12.

▲ **Hansen & Werhane**, 3104 Skokie Valley, Highland Park, Ill., CA Approx. **$1,250,000**, 3 story SCIENCE CENTER, LAKE FOREST, ILL. Lake Forest College, E. Deerpath Rd., Lake Forest, Ill. CD 4/14.

▲ **Haglund & Ames**, 123 Greenwood Ave., Waukegan, Ill., CA Est. **$1,500,000**, Contract 5, corrugated box PLANT, incl. mfg. office, storage, Grand St., east of Skokie Hy., GURNEE, ILL. Hoerner Boxes Inc., Keokuk, Iowa. Bids Oct. 18. CD 9/21.

▲ **R. T. Milord**, 9825 S. Crawford Ave., Evergreen Park, Ill., CA **$1,350,000**, HIGH SCHOOL, GYMNASIUM, LIBRARY, Holy Cross High School, 80th and Belmont Aves., RIVER GROVE, ILL. Brothers of Holy Cross, Midwest Province, Notre Dame, Ind. CD 4/5.

▲ **Charles Eichelkraut & Son Constr. Co.**, 714 W. Joliet St., Ottawa, Ill., CA **$1,061,070**, HIGH SCHOOL addn., STREATOR, ILL. Streator Twp. High School, 610 N. Bloomington St., Streator, Ill. Bids Oct. 11. CD 11/1, under LB.

▲ **Felmley-Dickerson Co.**, 1008 N. Goodwin Ave., Urbana, Ill., LB **$2,855,000**, general contract, COLLEGE CENTER, Illini Union Bldg. addn., URBANA, ILL. University of Illinois, 256 Admin. Bldg., Urbana, Ill. CD 1/23/58;
Bellis & Miller, Inc., 13 Main St., Champaign, Ill., LB **$798,777**, heating contract, Illini Union Bldg. (Urbana, Ill.).

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 17 Wyoming — November 18 Minnesota

STREETS AND ROADS

November 15 Iowa — November 17 Wyoming
November 18 Minnesota

† **N. M., Roswell**—SHOP, MISSILE ASSEMBLY, etc.—BA 11/22—U. S. Eng., Box 1538, Albuquerque, shop, missile assembly and maintenance, technical shop bldg., Walker Air Force Base, ENG-29-005-61-16. $800,000. CD 10/14.

BUILDINGS—BA

Tex., Austin—DRAMA—BA 11/22—University of Texas, Bd. Regents, Main Admin. Bld., drama Bldg. $800,000. Plans deposit $50. Bartlett Cocke, 3501 Broadway Ave., San Antonio, and Jessen, Jessen, Millhouse & Greeven, 2816 Hemphill Park, Austin,, archts. Reynolds & Morgan, Insurance Bld., San Antonio, and B. Segall, Jr., 705 Lamar St., Austin, engrs. CD 9/2.

▲ **Tex., El Paso**—HOSPITAL ADDNS.—BA 12/1—El Paso County Hospital Dist., City Hall or Courthouse, general hospital addns. $3,000,000-$5,000,000. Plans deposit $100 for 3 sets. Garland & Hilles & Associates, 507 Banner Bld., archts. Wm. H. Metcalf, 1823 Jefferson Place. N.W., Wash. D.C., consultant. Gordon Friesen & Associates, 1145 19th St. N.W., Wash., D. C., hospital consit's. CD 4/29/59.

BUILDINGS—SLC

▲ **Mo., Pevely**—MONASTERY, etc.—Benedictine Monks, P. O. Box 345, soon lets contract, 2 story, 10,000 sq. ft. masonry walls, rein.-con., etc. monastery, to incl. auditorium, library, chapel, five residences for retreatants, etc. $4,000,000. Drake-O'Meara Assocs., 212 S. Bemiston Ave., Clayton, Zone 5, archts. Chas. J. R. McClure & Assocs., 770 Paul Brown Bldg., St. Louis, Zone 1, mechanical engrs. Van & Vierse, 7908 Bonhomme, Clayton, Zone 5, electrical engrs. CD 12/1/59.

HEAVY CONSTRUCTION—LB & CA

▲† **Weitz Co., Inc.**, 406 Fleming Bldg., Des Moines, Iowa, CA **$1,494,899**, two dormitories and dining hall, Offutt Air Force Base, ENG-25-066-61-22, FORT CROOK, NEB. U.S. Eng., 1709 Jackson St., Omaha, Neb. Bids Sept. 13. CD 10/11.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, Bids opened 10/28,

Okla.—**Bruce Constr. Co.**, Woodward, Okla., LB **$1,075,830** est. $1,079,511, (4 bidders), and asph. base, b. conc. surf. I 40 6.38 mi. east of Hydro, Caddo Co.;

Okla.—**Cozad Constr. Co.**, Box 393, Sulphur, Okla., LB **$388,522**, est. $391,433, (7 bidders), grading draining 5.47 mi. US 270 between Wewoka and Holdenville, Hughes Co.;

Okla.—**Standard Industries, Inc.**, 2119 E. 11th St., Tulsa, Okla., LB **$338,885**, est. $371,657 (6 bidders), stab. aggreg. base, widening, b. conc. resurf. 6.175 mi. US 69 north of Atoka, Atoka Co.;

Okla.—**Anderson Constr. Co.**, Box 91, McAlester, Okla. LB **$153,135**, est. $186,450 (3 bidders), stab. aggreg. base, double bit. surf. 4.257 mi. Hy. 31, east of Kinta, Haskell Co.;

Okla.—**Fischer Constr. Co.**, Box 801, Norman, Okla. LB **$143,550**, est. $191,858, (5 bidders), signing, stripe, and delineation 12.519 mi. I 35, south and east of Edmond, Oklahoma Co. CD 10/5.

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—Flenniken Constr. Co., P. O. Box 6857, Dallas, Tex. **T. R. Vardeman & Son**, P. O. Box 526, Nacogdoches, Tex., CA **$704,728**, grading, strs., conc. pvt. and shldrs. 5.551 mi. Hy. US 59, Proj. F 201(16) and F 231(9), Nacogdoches and Angelina Counties;

Tex.—J. H. Strain & Sons, Inc., Box 5276, Abilene, Tex., CA **$526,185**, fl, base and one crs. surf. tr. 19.152 mi. Hy. US 82, Proj. F 455(4), Knox Co.;

Tex.—Russ Mitchell, Inc., P. O. Box 8068, Houston, Tex., CA **$723,433**, storm sewer, clearing and grubbing, Hy. IH 610, Proj I 610-7(71)814, Harris Co.;

Tex.—R. W. McKinney, Box 190, Nacogdoches, Tex., CA **$603,798**, grading, strs. and pvt. 4.332 mi. Hy. US 75, Proj. F 539(22) and (23), etc., Grayson Co.;

Tex.—M & N Constr. Co., Inc., Box 578, Pearland, Tex, CA **$564,584**, grading, strs. base and surf. 9.677 mi. Hy FM 149, Proj. C 720-3-2, Harris Co.;

Tex.—Texas Bitulithic, Gulf Bitulithic Co., Brown & Blakney, Inc., Box 10365, Houston, Tex., CA **$1,232-942**, grading, str. 1.086 mi. Hy. IH 35 W, Proj. I 35 W-5(10). Tarrant Co. Bids Oct. 19, awarded Oct. 28. Grand total $4,391,670. CD 10/25, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—J. O. Boswell & Sira & Payne, 311 Paris Ave., Lubbock, Tex, CA **$1,447,447**, grading, stab. sub. gr., strs., fl. base and b. conc. 4.026 mi. Hy US 87, Proj. F 546(28) & (29), Hale and Lubbock Counties.;

Tex.—R. B. Butler, P. O. Box 471, Bryan, Tex., CA **$1,042,073**, grading and strs., 8.074 mi. Hy. IH 20, Proj. I 20-6(22)529, Van Zandt Co. Bids Oct. 18, awarded Oct. 28. CD 10/21, under LB.

D. F. (Jack) Orts, General Cont'r., Inc., 302 Dora St., P. O. Box 6355, San Antonio, Tex., CA **$865,000**, airport terminal addn., SAN ANTONIO, TEX. City, City Hall, Dpt. Airport, San Antonio, Tex. CD 10/19.

▲ **NEW MEXICO**—State Hy. Comn., State Hy. Dpt. Bldg., Cerrillos Rd., Santa Fe,

N. M.—Allison & Haney, Inc., 1412 Broadway N.E., Albuquerque, N. M., CA **$996,843**, est. $1,028,387, (3 bidders), Lomas Blvd. west to west side of Wyoming Blvd. Proj. I-040-3(16) 165, I-40,

N. M.—O. D. Cowart, Bridge Blvd. S.W., Albuquerque, N.M., CA **$743,726**, est. $852,305, (3 bidders), I-40.4 mi. east of Guadalupe/Quay C. L. East, Proj. I-040-6(2) 313; CA **$405,641**, est. $395,926, (3 bidders) from I-25 north of Socorro southerly. Proj. F-001-3(4);

N. M.—J. H. Ryan & Sons, Inc., 872 Five Points Rd. S.W., Albuquerque, N. M., CA **$806,483**, est. $741,-516, (3 bidders), I-40 Guadalupe/Quay C. L. east, Proj. I-040-6(3)309;

N. M.—C. R. Davis, 1000 Manuel Ave. S.E., Albuquerque, N. M., CA **$392,259**, est. $310,930, (3 bidders), US 66 Santa Rosa Urban, Proj. F-003-5(5);

N. M.—Brown Constr. Co., 3525 4 N.W., Albuquerque, N. M., CA **$582,144**, est. $534,792, (3 bidders), US 70 Lordsburg northwest. Proj. F-011-1(2);

N. M.—Floyd Haake & Lonham Constr. Co., Agua Fria, Santa Fe, N.M., CA **$282,150**, est. 260,656, (3 bidders), Hudson St. in Silver City. Proj. F-013-1(7);

N. M.—Skousen-Hise & Skousen Constr., Springer Bldg., Albuquerque, N. M., CA **$1,157,169**, est. $1,536,789, (3 bidders), relocation US 84 near Abiquiu Dam, Proj. F-052(5);

N. M.—Longenbaugh & Coe, Inc., 524 Montano Rd. N.W., Albuquerque, N. M. CA **$263,299**, est. $271,-212, (3 bidders), S. R. Jamez Springs toward Battleship Rock. Proj. S-1319(5). Bids Oct. 28. Grand total $5,629,714. CD 10/19.

BUILDINGS—LB & CA

▲ **Chicago Bridge & Iron Co.**, 332 S. Michigan Ave., Chicago, Ill., CA **$1,500,000**, 1 story, 108x106 ft. PROPANE GAS STORAGE, 1 mi. east of Hy. 65 between Minnesota River and Hy. 13 in Burnsville Twp., SAVAGE, MINN. Minneapolis Gas Co., 739 Marquette Ave., Minneapolis, Minn.

▲ **Bennett Constr. Co.**, 3252 Ronaoke, Kansas City, Mo., CA **$1,278,285**, 10 story, 60 x 135 ft. masonry exterior air-conditioned Frank and Mary Bowen MEMORIAL RESIDENCE, RAYTOWN, MO. Jackson Ave. Christian Church Housing Corp., 1635 Jackson, Kansas City, Mo. Bids Oct. 19. CD 10/4.

▲ **W. B. Uhlhorn**, P. O. Box 2028, Harlingen, Tex., CA **$1,040,346**, HIGH SCHOOL, FORT STOCKTON, TEX. Fort Stockton Ind. School Dist., Fort Stockton, Tex. CD 10/27, under LB.

▲ **The Rackle Co. of Texas**, 8400 Lyons St., Houston, Tex., CA **$1,550,000**, two 2 story PARKING GARAGES, Downtown Area, HOUSTON, TEX. Owner, c/o The Rackle Co. of Texas, 8400 Lyons St., Houston, Tex. CD 10/26.

▲ **Security Constr. Co.**, Box 30256, Dallas, Tex., LB **$1,456,600**, general contract 2 story, 170,000 sq. ft., masonry, SENIOR HIGH SCHOOL, WICHITA FALLS, TEX. Wichita Falls Ind. School Dist., Wichita Falls, Tex. CD 10/5

▲ **Keller-Loup Constr. Co.**, 226 Fillmore, Denver, Colo., CA Approx. **$2,000,000**, 16 story, Empire House APARTMENT, DENVER, COLO. Aaron Lurie, c/o John Chester Smith, archt., 7920 Valley View Drive, Denver, Colo.

▲ **Ledgerwood Realty & Investment Co.**, 701 Colorado Blvd., Denver, Colo., rejected bids Oct. 6, 101 unit APARTMENT, at East 8th and Clarkson Sts., swimming pool and underground parking to be called Glen Ayre Towers, DENVER, COLO. LB **$1,812,056**. Edgar R. McMechan & Joseph Krabacher, 1530 Dower, Denver, Colo., archts. William M. McMechan, Enoch F. Peterson, 9635 E. Colfax, Denver, Colo., struc. engrs. William F. Grudis, c/o archts., mech. engrs. CD 10/14, under LB.

▲ **N. G. Petry Constr. Co.**, 114 West 7th Ave., Denver, Colo., CA **$1,000,000**, one story, 113,000 sq. ft. WAREHOUSE, DENVER, COLO. Carpenter Paper Co., 1504 23rd St., Denver, Colo.

▲ **Hensel Phelps Constr. Co.**, P.O. Box 604, Greeley, Colo., LB **$1,307,000**, est. $1,000,000, (7 bidders), 100-bed addn. to present HOSPITAL, GREELEY, COLO. Weld County General Hospital, 16th and 17th Avenues, Greeley, Colo. Fisher & Davis, 827 First Nat'l Bank Bldg., Denver, Colo., archts. Ketchum, Konkel & Hastings, 730 Kalamath, Denver, Colo., struc. engrs. Miner & Miner, 5598 S. Broadway, Littleton, Colo., mech. engrs. Bids Oct. 28. CD 10/21.

▲ **Lembke Constr. Co.**, Box 771, Colorado Springs, Colo., CA Approx. **$2,000,000**, one and two story, 165,000 sq. ft. JUNIOR COLLEGE (Branch Technical College) RANGELY, COLO. School Dist. No. 4, Rangely, Colo. Caudill, Rowlett, Scott, 150 Classen Blvd., Oklahoma City, Okla., archts. Awarded Oct. 20. CD 8/18/59.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 22 Washington

STREETS AND ROADS

November 18 Arizona — November 22 Washington
December 7, 8, 15 California

BUILDINGS—BA

▲ **Calif., Lompoc**—HIGH SCHOOL—BA 11/22—Lompoc Union School Dist., 203 L St., concrete block high school. $2,000,000. CD 12/9.

▲ **Calif., Orange**—SCHOOL—BA 11/22—Orange School Dist., 370 North Glassell St., Prospect Junior High School, Proj. N1.1. $1,200,000.

HEAVY CONSTRUCTION—LB & CA

▲ **Chugach Electric Assn.**, 8 and Gambell Sts., Anchorage, Alaska, returned unopened bids to have been opened Oct. 24, 115-kv transmission line over or around Turnagain Arm from Cooper Lake Hydro Proj., ALASKA. Over **$1,000,000**. North Pacific Consultants, Box 3008, Eastchester Branch, Anchorage, Alaska, engrs. CD 9/28.

▲ **ARIZONA**—State Hy. Dpt., 206 S 17th Ave., Phoenix, Bids opened 10/28,
Wallace & Wallace, Contractors, P. O. Box 470, Phoenix, Ariz., LB **$1,405,173**, est. $1,362,481, (5 bidders) grading, draining, subgrade seal, select material, aggregate base, bit. stabilized base, emulsified asphalt seal coat and construction of steel girder bridge, beginning approx. 2 mi. east of William and extending east over U. S. Rt. 66 for approx. 3.9 mi. toward Flagstaff, Ashfork-Flagstaff Hy. Coconino Co. CD 10/10.

▲ **Hart Constr. Co.**, 3536 E. 11th St., Tacoma, Wash. LB **$1,163,744** est. $946,000, (3 bidders) pier at E. 11th St. end of Sitcum Waterway for bulk cargo handling facilities, TACOMA, WASH. Port of Tacoma, Portacoma Rd., Tacoma, Wash. Bids Oct. 26. CD 9/28.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 10/27,
Daley Corp., P. O. Box 4067, North Park Station, San Diego, Calif., LB **$1,298,036**, (6 bidders), grading,

surf. 4.7 mi. four lane expressway on FAS Co. Rd. 730 (Murphy Canyon Rd.) between ½ mi. and 5.2 mi. north US Hy. 80 near San Diego, San Diego Co. CD 9/29.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
E. L. Yeager Co., E. L. Yeager Constr. Co., Inc., J. B. Stringfellow, P. O. Box 6, Riverside, Calif., CA **$3,872,547,** grading, paving and 8 bridges to provide 3 mi. 4 lane freeway U. S. Hy. 60 between Main St. and University of California at Riverside, Riverside Co. Bids Oct. 14, awarded Oct. 28. CD 10/20, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 10/27,
Ukropina-Polich, Ukropina, 201 East Las Tunas Dr., San Gabriel, Calif., LB **$3,685,185,** (5 bidders), 2.2 mi. eight lane freeway on Ventura Freeway between West of Buena Vista St. and Golden State Freeway at Griffith Park, incl. 3 traffic separation structures, 6 equestrian undercrossings and bridge over Los Angeles River, Los Angeles Co. CD 9/21.

▲† **Green Constr. Co., Winston Bros. & Tecon Corp.,** 20 North San Mateo Dr., San Mateo, Calif., CA **$7,613,855,** rockfill New Hogan Dam, Calaveras River northeast of Stockton, Spec. 2670, ENG-04-167-61-2, CALIFORNIA. U. S. Eng., 1209 8 St., Sacramento, Calif. Bids Oct. 25, awarded Oct. 28. CD 10/27, under LB.

▲ **Zarubica Co.,** 8550 Tujunga Ave., Sun Valley, Calif., LB **$2,069,381,** (9 bidders), Westwood Relief Sewer, Unit 1, LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. Bids Oct. 26. CD 10/6.

▲ **Guy F. Atkinson Co.,** 10 W. Orange Ave., South San Francisco, Calif., CA **$13,888,094,** Briones Dam, Bear Creek, OAKLAND, CALIF. East Bay Municipal Utility Dist., 2130 Adeline St., Oakland, Calif., CD 1/22/59;
B. J. Ukropina, T. P. Polich & Sons, 201 East Las Tunas Dr., San Gabriel, Calif., **Steve Kral Corp. & Vinnell Corp.,** 1145 Westminster, Alhambra, Calif., CA **$549,205,** 90 in. diam. Briones Aqueduct, Bear Creek (Oakland, Calif.).

▲ **J. Putman Henck,** 3947 Sierra Way, Pasadena, Calif., LB **$2,316,742,** est. $1,970,000, (6 bidders), water treatment facilities, Sacramento River near 10 Ave. and Riverside Blvd., SACRAMENTO, CALIF. City Council, City Hall, 9 and I Sts., Sacramento, Calif. James M Montgomery, 535 East Walnut St., Pasadena, Calif., engr. Bids Oct 27. CD 9/15.

▲ **Johnson, Long, Marker & Howley,** P. O. Box 356, Spring Valley, Calif., and/or **Einer Bros.,** P. O. Box 936, Escondido, Calif., LB **$1,627,563,** (8 bidders), Miramar pipe line, Miramar, SAN DIEGO, CALIF. City, Purchasing Agent, Rm. 161, 1600 Pacific Hy., San Diego 1, Calif. Bids Oct. 27. CD 10/11.

BUILDINGS—LB & CA

▲ **Behilyon's, Inc.,** 333 S. 2 E., Salt Lake City, Utah, CA Est. **$1,000,000,** 50,000 sqf ft. WAREHOUSE, SALT LAKE CITY, UTAH. General Electric Co., 132 S. 2nd W., Salt Lake City, Utah. Bids Oct. 24. CD 10/12.

▲ **Christiansen Bros. Inc.,** 209 W. 13 St. S., Salt Lake City, Utah, LB **$1,447,831,** est. $1,850,000, (8 bidders) Men's DORMITORY and LIVING CENTER, Ft. Douglas, part of Utah University Campus, SALT LAKE CITY, UTAH. State Bldg. Bd., State Capitol, Salt Lake City 14, Utah. Bids Oct. 25. CD 10/10.

▲ **H. Halvorsen, Inc.,** Judge Bldg., Salt Lake City 1, Utah, LB **$1,000,000,** 60,000 sq. ft. AIR-CONDITIONING EQUIPMENT PLANT, 86 acre site, 10600 S. St., SALT LAKE CITY, UTAH. Trane Co., 206 Cameron Ave., LaCrosse, Wis. CD 11/13/59.

▲† **Lembke Construction of Nevada, Inc.,** Box 1391, Las Vegas, Nev., LB **$1,739,638,** (8 bidders), enlisted men's BARRACKS and SUPPLY BUILDING at Army Electronic Proving Grounds, ENG-04-353-61-17, FORT HUACHUCA, ARIZ. U. S. Eng., 71 S. Figueroa, Los Angeles, Calif. Bids Oct. 26. CD 10/13.

▲ **A. J. Peters Constr. Co.,** 212 Park Plaza, Longview, Wash., CA **$2,500,000,** SHOPPING CENTER, 52,000 sq. ft. dept. store, 7 rein. con. bldgs on piling foundation, with elec. heating and air conditioning, LONGVIEW, WASH. Twin City Development Co., c/o contractor. R. E. Newhall, 1417 15th. Ave., Longview, Wash., archt. CD 9/26.

▲ **The Ralph M. Parsons Co.,** 4010 Bluebonnett St., Houston, Tex., CA Approx. **$3,750,000,** 50 mil. lb. annual capacity CARBON BLACK PLANT, BAKERSFIELD, CALIF. Continental Carbon Co., 1 Briar Dale Court, Houstor, Tex

▲ **Billee Constr. Co.,** 2135 D West Ball Rd., Anaheim, Calif., CA **$1,500,000,** 30 two story APARTMENTS, Sunswept Ave., GARDEN GROVE, CALIF. Rom Investment Co., 2180 Harbor Blvd., Anaheim, Calif.

▲ **Reynolds-Movius,** 13742 Clinton Ave., Garden Grove, Calif., Owner Builds, **$1,014,000** 78 frame, stucco DWELLINGS, Tract 3671, GARDEN GROVE, CALIF.

▲ **Farmstead, Inc.,** 15630 Crenshaw Blvd., Gardena, Calif., Owner Builds, **$1,111,300,** 67 DWELLINGS, Fragancia Ave., Los Altos Dr., Cristalino and La-Moine Sts., Tract 25517, LA PUENTE, CALIF.

▲† **Barrett Constr. Co. and Theodore G. Meyers & Sons,** 1800 Evans St., San Francisco, Calif., CA **$9,985,000,** BUILDING No 1, G. M. & S. HOSPITAL, MARTINEZ, CALIF. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Oct. 24. CD 10/27, under LB.

▲ **Dinwiddie Constr. Co.,** Crocker Bldg., San Francisco, Calif., CA Est. **$6,500,000,** STORE and double deck parking, Hillsdale Shopping Center, SAN MATEO, CALIF. The Bohannon Organization, 60 Hillsdale Mall, San Mateo, Calif. Welton Becket & Assoc., 153 Maiden Lane, San Francisco, Calif., archts. The Emporium-Capwell Co., 835 Market St., San Francisco, Calif., lessee. CD 12/16/59.

▲ **Carlton Builders,** 246 S. Robertson Blvd., Beverly Hills, Calif., CA **$1,463,100,** 82 DWELLINGS, Tract 25020, VAN NUYS, CALIF. INS Corp., 246 S. Robertston Blvd., Beverly Hills, Calif.

▲ **Ben Hayashi,** 142 Mokauea St., Honolulu, Hawaii, CA **$1,020,000,** 7 story COOPERATIVE OFFICE, HONOLULU, HAWAII. Skyline Developers, 1226 B Queen Emma St., Honolulu, Hawaii. Bradley & Wong, 1220 Waimanu St., Honolulu, Hawaii, archts. Awarded Oct. 27. CD 2/5.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **ONTARIO**—Dpt. Hys., Parliament Bldgs., Downsview, Bids opened 10/26,
Canada Grading & Structures Ltd., 419 Cherry St., Toronto, Ont., LB **$1,005,195,** central sub-structure Queen Elizabeth Way, Homer High Level Bridge, (contract 60-98), Homer. CD 9/21.

BUILDINGS—LB & CA

▲ **Trident Constr. Ltd.,** St. Boniface, Man., LB **$1,794,140,** rein.-con., limestone, precast concrete ANIMAL SCIENCE, FORT GARRY, MAN. University of Manitoba, Fort Garry, Man. Bids Oct. 12. CD 9/30.

▲ **Municipality of Metropolitan Toronto,** 67 Adelaide St. E., Toronto, Ont., rejected bids Oct. 18, 4 story, steel concrete masonry HOME FOR AGED, Lawrence Ave., TORONTO, ONT. Mathers & Haldenby, 10 St. Marys St., Toronto, Ont., archts. C. D. Carruthers & Wallace, Consultants, Ltd., 92 Yorkville Ave., Toronto, Ont., consult. engrs. LB **$2,281,000.** Will re-advertise. CD 10/26, under LB.

▲ **School Comn. of Louiseville,** Louiseville, Que. rejected bids June 16, ACADAMIE St. Louis de Gonzague, LOUISVILLE, QUE. LB **$1,074,000.** Will re-advertise. CD 6/27, under LB.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲ **Harold T. Smith International S. A.,** La Salle Bldg., 1028 Connecticut Ave. N.W., Wash. 6, D. C., U. S. A., CA **$9,000,000,** drilling, developing and equipping 1,000 ft. deep wells, Indus River south of Lahore, PAKISTAN. West Pakistan Water & Power Development Auth., Lahore, West Pakistan.

A NEW NAME FOR CONCRETE FORMS

SIMPLEX-WACO

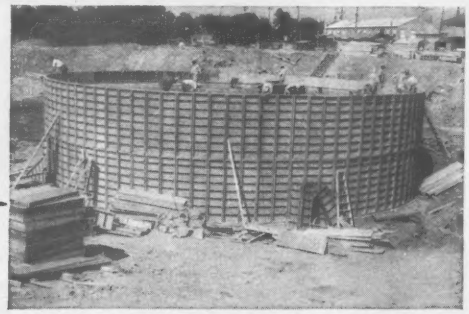
Self-Aligning

HEAVY DUTY CONCRETE FORMS

The name is new because Simplex Forms System, Inc. has purchased the concrete forms division of Waco Manufacturing Co.! And, while the basic Waco forms design is the same, you can count on years of Simplex experience to bring you the finest in quality and workmanship in Simplex-Waco forms.

Ideal for all types of concrete forming, these rugged, flexible forms will now be available on a wider scope through greater distribution.

Whether you buy or rent Simplex-Waco forms, you'll find that their built-in quality, standardized hardware, and proved durability will pay off in smooth, accurate walls job after job. Send for complete details today.



AN OUTSTANDING EXAMPLE OF SIMPLEX-WACO SIMPLICITY

Approximately 6,000 feet of Simplex-Waco concrete forms were used to form the inside and outside walls of this ¼ billion gallon water storage tank in Dallas, Texas. Because of fewer loose hardware parts, storage for wedges in panels, and an exclusive alignment slot, these steel reinforced panels were securely erected in a minimum of time.

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SIMPLEX INDUSTRIAL FORMS, INC.

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City of Binghamton sees clear water ahead for a full generation

Westinghouse Powers-Up New Filtration Plant to Meet Rising Demands of Next 30 Years

Present population: 85,000—growth reaching at least 105,000 by 1975. This is the future for Binghamton, booming city in upstate New York. With this fact in mind, planning of their new 4,000,000-dollar filtration plant accented expandability for rapidly increasing water demands to 1990.

Westinghouse has provided a power distribution system that will assure this objective. With present pumps and treating equipment, total capacity is 31,000,000 gallons per day. Plant capacity can be expanded 50% during the 30-year period without additional substation, bus or switchgear equipment. Beyond basic flexibility, the electrical equipment will be called upon for absolute, 24-hour reliability for this projected long life span. Westinghouse power components are coordinated to work together, and will fulfill this objective also . . . dependability, with minimum servicing or maintenance.

For look-ahead electrical planning and products to match, call your Westinghouse representative, or write Westinghouse Electric Corporation, P.O. Box 868, Pittsburgh 30, Pa.

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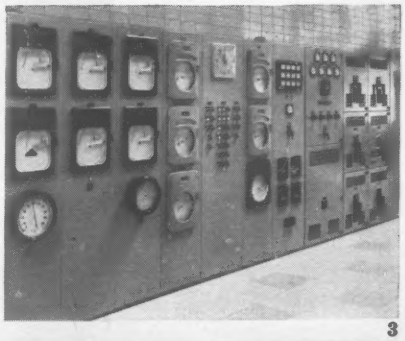

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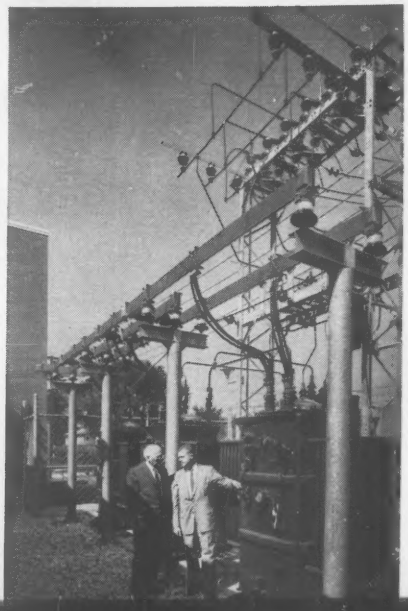

1. The Susquehanna gives up its water . . . Pipe gallery located under the filter operating floor houses raw water, backwash and waste water lines, control piping and valves.

2. Strength, beauty and simple utility . . . Plant exterior is finished in blue glazed brick, yellow porcelain enameled steel panels, anodized aluminum trim.

3. Utilized plant control . . . Main distribution center for new plant provides power to motor and auxiliary feeder circuits. Fed by 4000-ampere ventilated low-impedance bus duct, board consists of (right to left) plant service transformer and power panels; 480-volt switchboard with incoming line and motor feeder breakers of reliable DB design; control panels including flow and pressure indicators, gauges and master indicating lights to show status of all plant operating equipment. Entire unit was assembled by Westinghouse and delivered complete and prewired for fast, easy installation.

4. Mr. G. E. Rickard, Water Superintendent, checks ammeter reading at incoming switchgear and master control board with Mr. R. C. McNamara, City Engineer, who supervised over-all construction project.

5. Dependable power for 30 years . . . G. E. Rickard and R. D. Batley, Westinghouse Sales Engineer, discuss one of three Westinghouse SL transformers in plant outdoor substation. Present bank capacity is 2500 kva—future uprating to 2875 kva is possible through provisions for addition of forced air cooling. Westinghouse transformers feature exclusive Insuldur® insulation and Hipersil® grain-oriented steel cores to give extended life and higher efficiency. This substation, furnished by Westinghouse, also includes: 15-kv, 600-ampere, 100,000-kva IC oil circuit breakers; Type V disconnect switches; Type S station service transformer; main low-voltage bus as well as the integrated steel structure.

6

7

8

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Filtration Plant Powers-Up for Next 30 Years
(cont'd)

OWNER: *City of Binghamton*
GENERAL CONTRACTOR: *Smith-Howard and Sprague, Binghamton, N. Y.*
ELECTRICAL CONTRACTOR: *Lord Electric Co., Inc., New York, N. Y.*
CONSULTING ENGINEERS: *Leonard S. Wegman Co., New York, N. Y.*
Alexander Potter Associates, New York, N. Y.
ELECTRICAL DISTRIBUTOR: *Westinghouse Electric Supply Co., Long Island City, N. Y.*

6. Compact, expandable motor control . . . These Westinghouse units, together with the lighting panelboard (door open), centralize control for all auxiliary equipment in the chemical building. Motor starters serve mixers, drives, pumps. Thirty-kva transformer, feeding panelboard, completes assembly. Blank sections, at left, permit future additions.

7. Control for added capacity . . . Starters for high lift pumps include two new Westinghouse reduced voltage autotransformer types to complement several starters moved from original plant. Control accessories were added to modernize these—thus providing an economical conversion to the new control scheme. Westinghouse starters were used to control new 600-hp high lift pump and 125-hp wash water pump.

8. Close cooperation among the consulting engineer, electrical contractor and Westinghouse makes it possible for Binghamton to provide for the future today. Seen at left: A. J. Juris and E. J. Young of Lord Electric Co.; E. Piller, Westinghouse Electric Supply Co.; P. J. Gallagher, Westinghouse; and J. J. Fenley of Lord.

9. Color and light welcome visitors . . . Lobby area is handsome with terrazzo flooring, marble paneling, mosaic tile stair wells. Westinghouse Mainliner fluorescent luminaries blend with building's structural elements. Average illumination intensity is 90 foot-candles.

10. Room for more . . . C. E. Ahern, filter operator, seen at Westinghouse NLAB lighting panelboard which contains normal and emergency breaker sections with spares for future circuits. Flush trim and special brass hinges harmonize with architectural detail of plant.

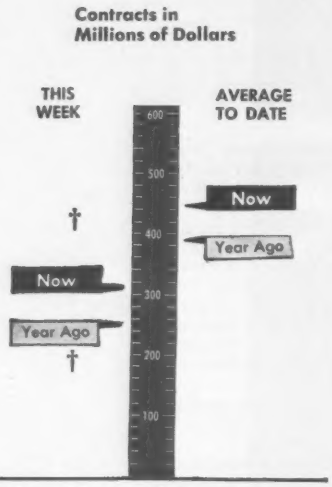
11. Take water, add chemicals, mix well . . . G. E. Rickard and R. D. Batley inspect the slow mix tanks. Settling tanks in background provide 3½-hour detention. Entire area is illuminated at night to promote safe operation and permit 24-hour observation of flocculation process.

J-94152-4

Westinghouse

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

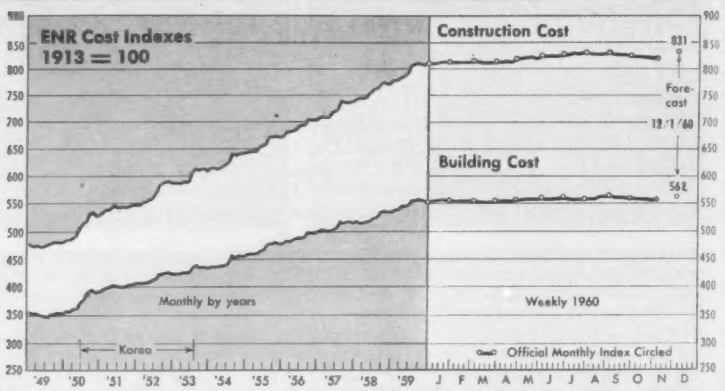
Contracts Awarded In 50 States By Type	This Week†	Cum. 45 wks 1960	Chge '59-'60 %
	millions		
All Heavy Construction	$314.4	$19,941.6	+13
By Ownership			
PRIVATE	130.3	10,733.4	+21
PUBLIC	184.1	9,208.2	+ 5
State & Municipal	143.0	7,192.0	+15
Federal	41.1	2,016.2	−19
By Type of Work			
PUBLIC			
Waterworks	19.7	410.0	+20
Sewerage	17.5	517.5	− 8
Bridges*	11.4	705.9	+41
Highways	44.1	2,938.2	+15
Earthwork, Dams & Waterways	8.7	672.5	−13
Buildings:			
Excl. Housing	76.2	2,146.0	− 6
Housing	1.0	594.0	+ 7
Unclassified	7.6	1,231.7	+ 4
PRIVATE			
Buildings:			
Mass Housing	42.1	5,243.7	+31
Commercial	47.9	2,143.7	+15
Industrial	30.3	2,376.2	− 6
Unclassified	7.9	962.2	+116

† 4-day week. * Includes private bridges.

NOTE Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Nov. 3	Cum. 45 wks 1960	Chge '59-'60 %
	millions		
Corporate Securities	$160.0	$3,297.6	+0.3
State and Municipal:			
All Except Housing	58.6	5,495.9	+ 9
Housing	....	189.3	+76
Federal Loans	2.8	165.7	+33
Federal Aid	....	3,228.4	− 3
Total Nonfederal	$221.3	$12,376.9	+ 4
Federal Appropriations:			
Projects in U. S.	....	$ 3,165.9	−11
Outside U. S.	....	159.1	+610
Total New Capital	$221.3	$15,701.6	+ 1



ENR INDEXES (1913=100), 20-cities' average	Week of Nov. 3 1960	% Change from Sept. 29 1960	% Change from Oct. 29 1959
Construction Cost	830.09*	+0.06	+2.6
Building Cost	561.11*	−0.06	+1.2

* Official Monthly Index for November, 1960.
To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

This Month . . .

WAGE RATES, 20-cities' average	Nov. 1960	% Change from Oct. 1960	% Change from Nov. 1959
Common	$2.745	+0.2	+4.6
Skilled (average 3 trades)	4.095	+0.1	+4.0
Bricklayers	4.310	+0.06	+3.4
Structural Ironworkers	4.145	+0.1	+4.4
Carpenters	3.832	+0.2	+4.5
Equipment operators (average three types)	3.744	+0.7	+5.2
MATERIAL PRICES, 20-cities' average			
Structural Steel (average 3 mills), per cwt	5.50	0	0
Lumber, 2x4 Fir, per M fbm	115.90	−0.6	−5.5
Lumber, 2x4 Pine, per M fbm	108.40	−0.3	−0.5
Cement, bulk, per bbl	4.02	0	+2.0
Sand, per ton	2.362	0	−4.3
Ready-mixed concrete, per cu yd	14.34	+0.3	+1.8
Gypsum sheathing, ½″x2′x8′, per Msf*	62.47	−0.1	−1.4
Fiber board sheathing, ½″ sq. ed., per Msf*	70.66	−0.4	−4.0
Mineral wool insulation, 3′ batts, per Msf*	67.90	−0.2	−7.0
Crushed stone, 1½″, per ton, CL	2.648	0	−2.0
Concrete blocks, sand/gravel, 8″x8″x16″, each*	0.2284	0	−9.0

Latest Month . . .

	Oct. 1960	Sept. 1960	Oct. 1959
Brick, common per M	41.02	0	+9.6
Lime, hydrated finishing, per ton, CL	38.78	0	0
Structural clay tile, 3x12x12″, per M, 2,000 up*	188.20	0	+1.8
Vitrified clay sewer pipe, std 12″, per ft	1.408	0	+3.0
Concrete sewer pipe, 12″, per ft	1.419	0	+6.0

* Delivered, trucklots

ENR INDEX REVIEW

1959	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
Sept	811.76	170.18	555.88	158.01	545	158
Oct	810.60	169.94	555.40	157.88	415	120
Nov	808.98	169.60	554.19	157.53	509	147
Dec	807.85	169.36	552.30	157.10	436	126
1959 Average	796.91	167.07	547.82	155.72	540	156
1960						
Jan	811.84	170.20	554.40	157.57	432	125
Feb	812.73	170.38	555.43	157.92	486	140
Mar	813.26	170.49	555.16	157.81	533	154
Apr	814.78	170.81	555.98	157.83	695	201
May	822.58	172.45	562.59	158.52	610	176
June	826.64	173.30	561.02	159.16	784	227
July	829.33	173.86	562.63	159.93	682	197
Aug	830.18	174.04	562.17	159.80	631	182
Sept	830.92	174.20	562.79	159.97	603	174
Oct	829.58	173.92	561.45	159.59	591	171
Nov	830.09	174.02	561.11	159.50	...	...

It's Money-Finding Time in the States

- **Financing the highway program will be a key task before 46 legislatures due to convene soon.**
- **Many of them face the unpleasant duty of boosting highway-user taxes again.**

Legislative sessions are dead ahead in 46 states. One of the big problems looming before the lawmakers: Financing highway construction.

The biggest spender on highways, California, already has told a state legislative committee that it would be advisable to boost the gasoline tax or increase motor vehicle fees if the 20-year demands for county roads and city streets is to be met. Such roads alone will require outlays of close to $13 billion in the next two decades.

Following hard on the heels of this announcement was the near-term problem of the 1961-62 highway budget, which will go to the budget session of the legislature. (General sessions in California are held in even years.) The Highway Commission has adoped a budget of $633.5 million. Of this total, major construction and improvements will take $348 million. The remainder goes for rights-of-way, resurfacing, signs, minor improvements and administration.

The current level of highway revenues appears sufficient to handle the near-term needs, but the balance is a fine one. Funds for highways, including federal aid, are expected to be equal too, or perhaps slightly higher than, the budget expenditures.

In Wyoming, the lawmakers will be told that the state will have to spend $593 million in the next 20 years to improve state highways. County road needs will require additional outlays of $74 million and city streets another $4 million.

A report of the Automotive Safety Foundation, which resulted from a 15-month study of the state's highway system, contained no recommendations for obtaining the revenues. It noted, however, that in the past two years the state spent about $63 million on construction, maintenance and administration, a rate of spending far below anticipated needs for construction alone.

Changes urged were along both administrative and legislative lines.

Vermont's problem is big for such a relatively small state. Projected highway requirements are extensive, yet the state so far is falling short of providing the money to fulfill its needs.

This year, in a session adjourned from 1959's regular session, the legislature voted a 2% excise tax on motor vehicles. It became effective in March. The legislature balked, however, on the issue of increasing the gasoline tax.

The state will have to increase that levy by half a cent or one cent per gallon if it is to come close to accomplishing the program recommended recently to Gov. Robert T. Stafford by the Highway Department. It proposed a 12-year highway construction program that is expected to cost $333.7 million. Of this, Vermont would have to pay $66.7 million. The remainder would be covered by federal aid.

Maine, too, is heading for a highway fund deficit unless highway-user taxes are increased. The highway fund budget for the fiscal biennium 1962-63 is set at $79 million. In presenting the budget, however, David H. Stevens, chairman of the Highway Commission, said that at present construction levels the state will be heading into a $6-million to $7-million deficit by fiscal 1964 and 1965.

He recommends that the 1961 legislature plan to offset the threatened deficit by imposing new taxes or lifting existing taxes to bring in an additional $1.5 million annually between 1961 and 1965.

Whether the legislature will go along with the suggestion is problematical. In 1957, the legislature voted to increase drivers' licenses and small-truck registration fees. The act, however, tied the increase to a referendum. The voters rejected the increases.

Missouri's joint Legislative Highway Study Commission reportedly will recommend raising the state gasoline tax by two cents a gallon to a total of five cents. Although the state levy, even at five cents would be well below those of other states, opposition to this proposal can be expected from some of the larger cities, which impose a gasoline tax of their own. St. Louis, for example, has a tax of two cents per gallon.

Minnesota may increase its gas tax levy by one cent, if the legislature accepts the suggestion of the Highway Department. Such an increase would provide an additional $11 million, which would be used to finance additional construction of roads in the ABC system.

Pennsylvania's legislature will be faced with two controversial proposals. One is a call for legislation that would authorize sale of $150 million worth of bonds to speed construction of an east-west toll-free highway. The proposal comes from the Keystone Shortway Association. And the state administration has already called for a boost of one cent in the state's gasoline tax. The added revenues would go for construction and maintenance of roads in the municipalities.

And in Mississippi, one of the four states that have no regular session scheduled, there are indications that more funds than now available will be required. (The other three states with no scheduled session are Kentucky, Louisiana and Virginia.)

New York Firms Join Forces for World's Fair

An engineering firm, a construction company and a public relations firm have joined forces to tap the potential $500-million construction market that will be provided by the 1964 New York World's Fair.

Ebasco Services Inc., Walter Kidde Constructors, Inc., and Vandeburg-Linkletter Associates, Inc., all of New York City, have formed V-E-K Associates Inc. V-E-K will handle initial planning, design and construction, exhibit management, show programming, and even the eventual dismantling and razing of temporary exhibits and buildings. The firm will offer these services both to governmental bodies and private industry.

V-E-K is jointly owned by Vandeburg-Linkletter Associates and Electric Bond & Share Co. Electric Bond & Share owns Ebasco and Walter Kidde Constructors.

C. M. Vandeburg, president of Vandeburg-Linkletter, is president of V-E-K Associates. Other key members of the Vandeburg-Linkletter concern are Adm. Robert B. Carney, former Chief of Naval Operations, and Art Linkletter, television and radio personality.

For this office-building project in Montreal . . .

Webb & Knapp Gets Two Partners

Webb & Knapp (Canada) Ltd. has completed financing for its $80-million Place Ville-Marie office building project in Montreal. In the process, the company, which is an independent affiliate of Webb & Knapp, Inc. of New York City, has taken in two United Kingdom companies as joint partners in the ownership of the high-rise development.

The partners are Eagle Star Insurance Co. and Second Covent Garden Property Co., Ltd. With Webb & Knapp, they will provide $30 million in equity capital and debentures through equal ownership of a new holding company, Trizec Corp. Ltd. Place Ville-Marie Corp., formerly a subsidiary of the Canadian Webb & Knapp, now becomes a wholly-owned subsidiary of Trizec.

Prior to this operation, Webb & Knapp obtained an agreement for permanent financing of the development through the sale of $50 million worth of bonds, which were bought by a major insurance company. Name of the company was not disclosed.

The Canadian transaction is the latest in a series of moves aimed at consolidating and strengthening the financial position of Webb & Knapp, Inc. of New York City.

Since last summer, the company has sold several of its major holdings and leases of New York City real estate. It also has taken in Aluminum Company of America as a joint venturer on two big proposed construction projects—the $250-million Century City commercial-residential development in Los Angeles (see below) and a $40-million high-rise office and apartment buildings project in Manhattan.

The Montreal project, now under way, is on a seven-acre site over tracks of Canadian National Railways. The first phase of construction includes a 42-story office building, a three-acre shopping and office buildings plaza and a 1,500-car garage.

Century City Start Marked By Transfer of $400,000

Webb & Knapp, Inc., and Aluminum Co. of America have taken two more steps toward construction of their $250-million Century City real estate development in Los Angeles. The joint developers paid the City Board of Public Works $400,000 toward the cost of a relief sewer to serve the area, and they filed a tentative street layout with the City Planning Commission.

The two firms made a $5-million down payment on the $43-million site two months ago (ENR Sept. 1, p. 26).

Construction of the first phase will start in the spring, according to Frederick J. Gebers, manager of the development. This part of the job will include a 125-ft-wide avenue between Santa Monica and Pico Boulevard, a regional shopping center and several apartment and office buildings.

Down Again

Equipment orders slip 13% during September

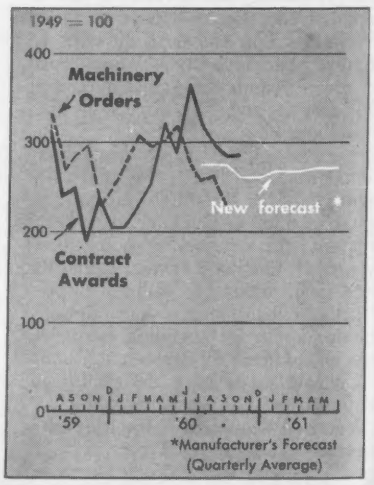
Orders for equipment dropped 13% in September. The slide pulled the McGraw-Hill Economics Department's new orders index for construction and mining machinery down to 223, based on average monthly dollar volume in 1949 as 100.

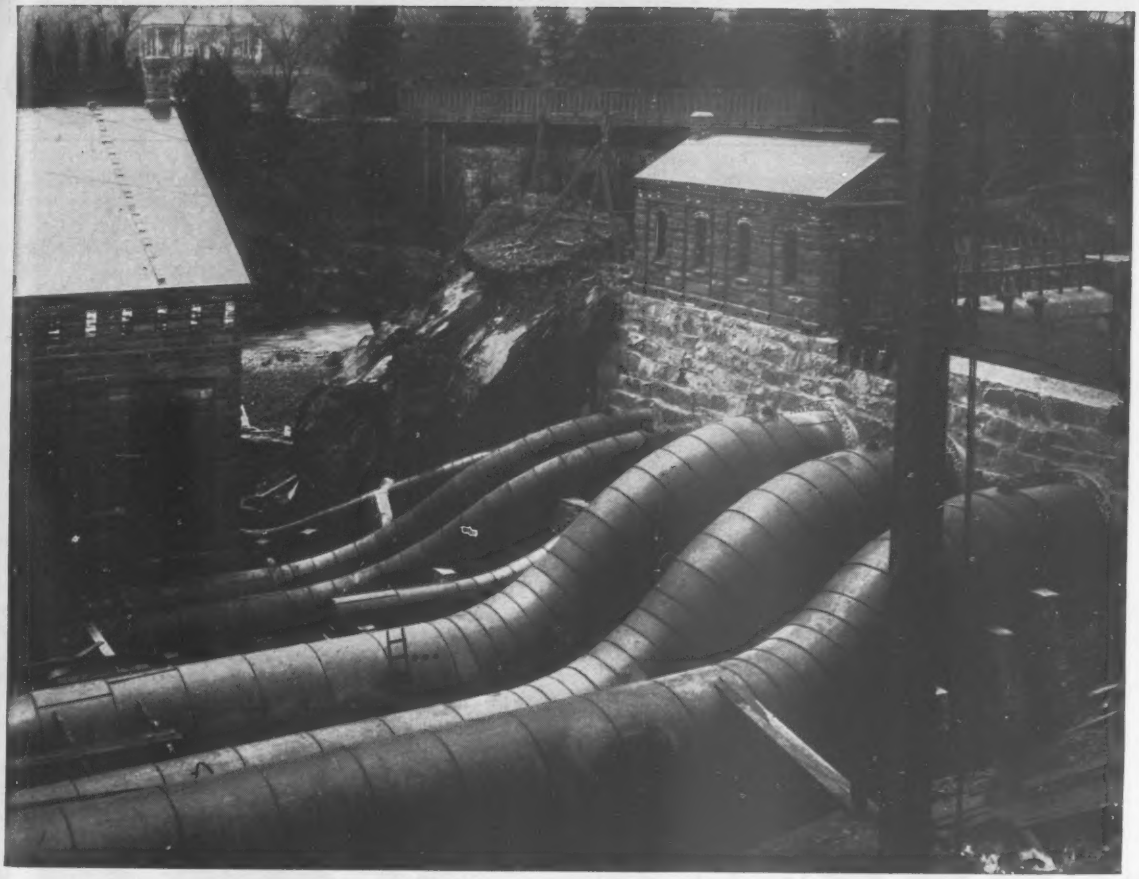
The reading is the lowest value of the monthly index since August 1958. It also is 21% under last year when the index hit an all-time high for a September month.

The value, aside from the comparison with September 1959, is better than the same months in the big-volume years of 1955 through 1958, when the index ranged from 148 to 150. The index is based on total order volume of cooperating companies, each predominantly a manufacturer of construction and mining machinery.

Although orders moved in the same direction as heavy construction contractors' new business in September, the gap widened between the two indicators (see chart). This probably means that a generous number of contractors are "underbuying" new equipment relative to their 1960 contract volume. This underbuying is therefore making up for their overbuying in 1959, as indicated by the same chart.

Construction contracts showed slightly more strength in October than in September, according to ENR. The Contract Award Index rose one point to 286, based on average monthly volume in 1949 as 100. This was sharply higher than October 1959, and far above any other October on record except 1956 when contracts scored the all-time high for the month of 299.





Steel pipe installed in 1899 is still on the job

In 1921 a washout completely undermined this thin-walled (¼-in.) 30-in. main in Paterson. It held! And it's still going strong today.

OVER sixty years ago, when a predecessor of the Passaic Valley Water Commission built a pumping station at Little Falls, New Jersey, they installed the riveted steel pipe shown above. It includes three 12-ft penstocks, and one 36-in., one 48-in., and two 66-in. supply mains.

In 1903 a filtration plant (the world's first large-size rapid sand filter system) was added. Since that time the major portion of the water supply for the communities of Paterson, Passaic, and Clifton has passed through these pipes. With time out for cleaning and re-lining two of the penstocks, the lines have been in constant service for over sixty years.

Beginning in 1894, over thirty miles of large-diameter steel mains have been installed in the area served by the Passaic Valley Water Commission, and all are in service today.

Isn't this persuasive evidence of the long service life of steel water mains?

For information about today's vastly improved steel pipe, please contact the Bethlehem sales office nearest you.

Steel *for Strength*
. . . Economy
. . . Versatility

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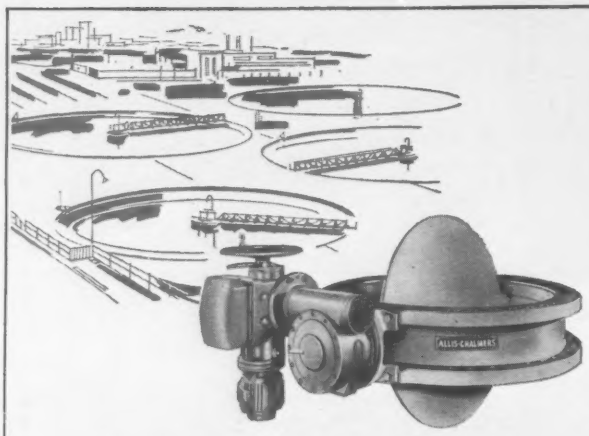
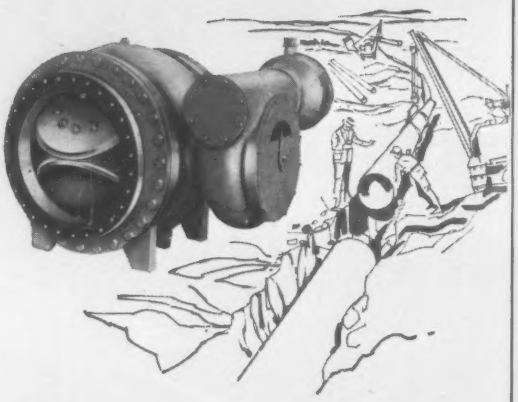
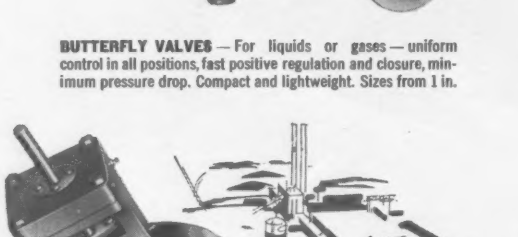


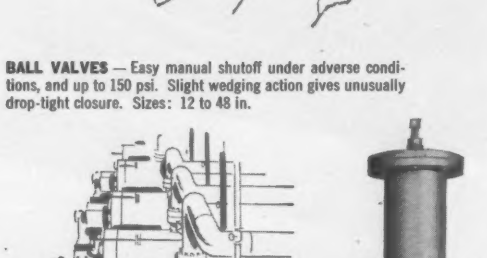
BUTTERFLY VALVES — For liquids or gases — uniform control in all positions, fast positive regulation and closure, minimum pressure drop. Compact and lightweight. Sizes from 1 in.



BALL VALVES — Easy manual shutoff under adverse conditions, and up to 150 psi. Slight wedging action gives unusually drop-tight closure. Sizes: 12 to 48 in.



WAFER VALVES — A new design of butterfly valves with space-saving flexibility, suited to most any type of operation. Sizes from 3 to 36 in., including high-pressure types.



ROTOVALVE—A cone valve suited to virtually any type of operation or location. Offers the least pressure loss, greatest initial shutoff, controlled closing time, positive seating.

Now: for power plants, sewage and water works —

a full line of rotary valves

Serving you even better through a broader line—Allis-Chalmers offers the finest in butterfly, ball and cone valves for industrial applications, power plants, sewage and water works. Also available are complete valving systems in standardized "packages" that provide *remote, telemetered control of valve operation.* These additions further round out Allis-Chalmers line that includes Angle, Needle, Relief valves, sleeve-type valves and accumulator systems. *For details, contact your Allis-Chalmers valve representative or write* **Allis-Chalmers,** *Milwaukee 1, Wisconsin.* Rotovalve is an Allis-Chalmers trademark.

A-1381

Contracts Climb to a 10-Month Record

Heavy construction contract awards of $1.8 billion in October boosted volume in the first 10 months to a record $19.3 billion. The cumulative total is now 13% ahead of 1959's same period, compared to a 10% lead at the close of the first nine months.

October's new construction business not only edged ahead of September by 1% on a weekly average basis, but also shot 40% ahead of the pace set one year ago. As a result, every type of heavy construction either widened its margin over 1959, cut the gap, or held its own in the 10-month period.

Private construction rose. Bolstered by a major pipeline award and mass housing contracts, it chalked up $1.1 billion in new business in October, an 18% increase over the September weekly pace and 72% over one year ago. Actual volume for the five-week September of this year was $1.2 billion, and for the five-week month a year ago, $797 million. The $10.4 billion worth of private contract awards this year is a 22% gain over the same period last year, compared to a gain of only 17% at the end of the first nine months. The total exceeds every year except 1956.

Public construction's pace slowed in October, with only sewerage contracts showing a gain over September—a modest 3%. The $698-million public construction total for October compares with the $1.1 billion in September and $704.9 million in October 1959. On a weekly average basis, October fell 19% from September, but was a 24% gain over October 1959. For the 10-month period, public projects widened their gain over 1959 by 5% compared to a 3% gain over 1959 at the end of the first nine months. Cumulative volume so far is $8.8 billion, a total that tops every year except 1958.

State and municipal work in October totaled $601 million, compared to September volume of $889.5 million in September. The October total is 1% below September on a weekly average basis, but 42% above one year ago, when October awards totaled only $528.4 million. In 10 months, $6.9 billion has been added to contractors' books, up 14% from 1959.

Federal work continued to lag. October awards hit the low for the year, with contracts of $97 million, a drop of 34% from the pace of September's volume of $183.9 million, and 31% below the weekly average of October 1959 when volume totaled $176.5 million. So far, the federal government has awarded contracts of $1.9 billion.

The spectacular rise of 665% in unclassified private awards stems from $266 million worth of contracts for the U. S. section of a 1,400-mile U. S.-Canadian gas pipeline.

Cost Indexes Go Separate Ways

Construction and building costs are going in opposite directions this month: Construction costs are up, building costs are down.

ENR's 20-Cities Construction Cost Index is up .06% to 830.09 and the 20-Cities Building Cost Index is down .06% to 561.11. Both indexes are based on 1913 as 100.

Compared with November 1959, however, the values on both indexes are higher. The Construction Cost Index is up 2.6% and the Building Cost Index 1.2%.

The rise in construction costs this month was spurred by deferred wage increases of five cents hourly for common labor in New Orleans and St. Louis. These boosts offset soft lumber prices in several cities.

But the same weakness in lumber counterbalances the effect of deferred five-cent hourly wage increases for bricklayers, carpenters and structural ironworkers in New Orleans, and carpenters and ironworkers in St. Louis.

Recent freight-rate increases by several railroads on a number of basic commodities may nudge some material prices higher in the next few weeks. So far, most building supplies dealers appear willing to absorb the slight increases. Bulk cement prices, however, are up two cents a barrel in Baltimore, New York City and Minneapolis as a result of the new rates.

Engineering Construction Contracts for October

Thousands of Dollars (000) omitted

	October, 1960								U. S. Cumulative			Canada
	New England	Middle Atlantic	South	Mid-West	Mississippi to Rockies	Far West*	Total U. S.	% Change '59 to '60 (Av wk)	1960 (43 wks)	1959 (44 wks)	% Change '59 to '60 (Av wk)	Oct. 1960
Public Works Total	**33,283**	**120,039**	**125,573**	**158,315**	**144,738**	**115,907**	**697,855**	**+24**	**8,815,867**	**8,601,570**	**+ 5**	**56,169**
Waterworks	707	3,744	4,534	1,755	5,689	6,385	22,814	+34	385,603	335,390	+18	1,566
Sewerage	1,627	6,399	11,496	7,168	7,704	7,832	42,226	0	485,004	552,409	−10	2,235
Bridges	648	6,651	5,714	9,007	10,580	6,087	38,687	+48	673,345	479,806	+44	4,293
Earthwork, Waterways	600	446	5,710	9,285	17,517	8,483	42,041	− 8	649,391	759,940	−13	.....
Streets and roads	6,206	45,316	51,419	69,976	72,918	36,115	281,950	+80	2,836,064	2,514,754	+15	15,287
Buildings: Residential	1,867	658	1,949	21,025	3,656	656	29,811	− 6	560,389	547,739	+ 5	2,968
Other	14,907	49,470	31,468	22,307	20,850	34,527	173,529	+ 3	2,015,079	2,231,239	− 8	27,463
Unclassified	6,721	7,355	13,283	17,792	5,824	15,822	66,797	−11	1,210,992	1,180,293	+ 5	2,357
State & Municipal	27,733	112,470	102,057	146,323	118,296	94,131	601,010	+42	6,881,464	6,153,807	+14	53,102
Federal	5,550	7,569	23,516	11,992	26,442	21,776	96,845	−31	1,934,403	2,447,763	−19	3,067
Private, Total	**71,600**	**204,003**	**148,327**	**153,740**	**133,167**	**386,842**	**1,097,679**	**+72**	**10,437,869**	**8,758,113**	**+22**	**206,565**
Bridges	.....	.....	1,800	771	.....	.....	2,571	+24	5,507	10,923	−48	.....
Buildings: Industrial	7,512	37,203	23,309	82,808	26,399	11,293	188,524	+10	2,319,009	2,503,302	− 5	17,943
Mass housing	41,541	124,861	81,027	47,948	52,236	84,733	432,346	+39	5,107,420	3,954,668	+32	9,208
Other	22,547	40,519	35,395	20,038	42,681	17,255	178,435	+57	2,052,782	1,846,008	+14	23,414
Unclassified	.....	1,420	6,796	2,175	11,851	273,561	295,803	+646	953,151	443,212	+120	156,000
Total, Oct., 1960—4 weeks*	**104,883**	**324,042**	**273,900**	**312,055**	**277,905**	**502,749**	**1,795,534**	**+49**	.....	.....	.....	**262,734**
Total, Sept., 1960—5 weeks*	170,028	547,441	274,551	361,574	578,349	300,482	2,232,425	....	.....	.....	.....	157,388
Total, Oct., 1959—5 weeks*	127,311	284,469	333,240	230,673	356,501	170,018	1,502,212	....	.....	.....	.....	123,157
Ten Mos—1960 (43 wks)	***1,189,880**	**4,451,587**	**2,959,156**	**2,920,911**	**4,255,845**	**3,476,357**	.....	....	**19,253,736**	.....	**+13**	**1,684,014**
Ten Mos—1959 (44 wks)	*1,114,825	3,717,668	2,995,809	3,078,897	3,557,850	2,894,634	.....	....	.....	17,359,683	....	1,263,300
% Change '59 to '60 (Av wk)	+ 9	+23	+ 1	− 3	+22	+23	.....	....	.....	.....	....	+36

*Includes Alaska & Hawaii contracts

Engineering Union Gets NLRB Help

- **Efforts to unseat nationally known professional union lead to unfair labor practice complaint.**
- **Dispute between Engineers Association and Sperry Gyroscope involves union that joined AFL-CIO.**

Another chapter in engineering unionism began last week when the National Labor Relations Board issued an unfair labor practice complaint against the Sperry Gyroscope Corp., which is a division of Sperry Rand Corp. at Great Neck, N. Y.

The complaint alleges that Sperry attempted to unseat the plant's professional union, known as Engineers Association-International Union of Electrical Workers, by promoting the activities of a decertification committee and by various electioneering activities related to a September 8 representation election. EA lost the election by a margin of 215 votes out of a total of 3,233 valid votes cast (ENR Sept. 15, p. 101). A hearing on the complaint is scheduled for December 5.

EA President Charles Hall called the issuance of the complaint a "complete victory for the union." Sperry, meanwhile, has informed its engineering personnel that "while we are still studying the charges, they appear to be based in large part on a misconception that senior engineers are 'supervisors' under the labor laws and are therefore not entitled to take part in union activity or to make financial or other contributions to such activity."

The gist of the NLRB complaint is that the company acting through its agents and supervisors allegedly violated the Taft-Hartley Act by "interfering with, restraining and coercing its employees in the exercise of" their rights to have, or not have, union representation.

The EA fight for survival is being watched with interest across the nation.

EA for many years has been a prime leader in the search for a more effective voice for the employed engineer, and has tried various forms of national federations of unions representing professionals and technicians. After an unsuccessful affiliation with Engineers and Scientists of America, and after an abortive attempt to organize Engineers and Scientists Guild, it finally turned earlier this year to affiliation with an AFL-CIO union—James Carey's IUE—after the groundwork was laid for the creation of Engineering Councils within the AFL-CIO movement.

As a result of this background, the EA-Sperry developments bring two perennial questions into sharper focus:

- How do professionals feel about unionism?
- How do professionals who want a union feel about AFL-CIO affiliation?

Some members of EA have expressed the view that the bargaining rights of EA would never have been challenged if the affiliation with the IUE had not occurred, and that, even then, the affiliation would have withstood the decertification test if the election had been "fairly" conducted. The recent reelection of Mr. Hall—principal architect of the affiliation—as president of the union is pointed to as a vote of confidence in the course EA has chosen.

Mr. Hall said last week he is confident the charges in the NLRB complaint will be sustained and that the decertification results will be set aside.

Specifically, the general counsel of the board has charged that Sperry, acting through its agents and supervisors:

- "Initiated, sponsored and encouraged the organization and formation of a committee known as the 'Decertification Committee,' to institute proceedings to decertify Local 445 and to eliminate said union . . ."
- "Assisted said 'Decertification Committee' in said objective by urging (Sperry's) employees at the main plant to support the committee . . ."
- "Permitted various employees to suspend their work at the main plant and to conduct business on behalf of the 'Decertification Committee', and paid such employees for the time spent on such activities . . ."
- "Actively participated in the administration, meetings of and affairs of the 'Decerification Committee' and contributed financial and other support to the movement . . ."

EA, meanwhile, has boiled its original grounds for contesting the election down to these allegations, and the NLRB regional director handling the case has recommended consolidation of that proceeding with the new one.

The issuance of the complaint, which followed unfair labor practice charges filed by the union, grew out of the board's investigation of the union's formal objections to the conduct of the election and its results.

EA's bargaining rights remain undisturbed during the litigation.

Sperry was given 10 days in which to file an answer to the charges. Giving some indication of the course Sperry may take, a spokesman for the company has disclaimed the idea that senior engineers are supervisors and a part of management excluded from union activity.

"That, of course, has not been the understanding and practice at Sperry," the company told its engineering personnel last week, "where senior engineers have been covered by the EA contract, have held EA office, were specifically listed among the employees entitled to vote in the NLRB election, and voted without challenge."

In view of these developments, it is apt to be several months before anyone can tell whether the decertification election at Sperry can be regarded as a rejection of engineering unionism and of AFL-CIO affiliation in particular.

Unions Press Teamsters To Honor Picket Lines

The Toronto Building and Construction Trades Council has threatened retaliatory action against a major affiliate of the teamsters union for refusing to respect picket lines set up by the building trades unions.

The feud stems from an organizing drive conducted by the building trades in the housing field. Nonunion projects have been picketed, and these are the lines the teamsters reportedly breached.

The 31 unions served notice that their members would refuse to accept ready-mix concrete and other materials from members of the teamster local.

The proposed boycott could cripple many of the construction projects in the Toronto area.

One of the immediate results is that the Toronto Builders' Exchange has asked the Ontario Labor Relations Board for permission to prosecute the plasterers union.

The Exchange claims the plasterers engaged in a boycott by refusing to handle ready-mix concrete delivered to a Toronto garage project by members of the teamsters local.

Labor in Brief . . .

• **Agency shop**—The AFL-CIO has asked the National Labor Relations Board to rule in favor of the validity of agency shop clauses in right-to-work law states and to require employers to bargain on them. The issue is before the board in an Indiana case involving General Motors Corp. and the United Auto Workers Union. NLRB General Counsel Stuart Rothman contends "agency shop" agreements are legal.

• **No arguments**—At the annual meeting of its board of directors last month the Cleveland Building Trades Employers' Association reported that its members have encountered relatively few jurisdictional disputes in the past year. All of them, it said, were settled on a local basis without asking the National Joint Board for assistance.

• **UCW discontinued**—The United Mine Workers of America has reorganized its District 50, dropping the United Construction Workers and United Marine Workers as divisions of the District, and transferring the membership of all their local unions to District 50. Collective bargaining agreements with District 50 now cover workers in 38 different industries, including building and construction.

• **Prevailing wages**—The low bid on a $1.1-million, 100-unit federal housing project in Russellville, Ky., exceeds available money by $115,000. The Housing Commission claims the trouble is that wages set under Davis-Bacon and used in the bids are higher than those prevailing in the area. It is trying to get the rates reduced.

Construction Wages Hit $3.66

The estimated average hourly wage scale of union construction workers had climbed to $3.66 by October 1, according to the U. S. Department of Labor.

This was a result of pay increases averaging 0.4% that became effective during the third quarter.

The October level of wages, the government reported, is about 78% above the average for the three years 1947-49. It is 4% higher than the figure recorded for year ago.

The average of rate revisions during the third quarter, the Labor Department said, was slightly smaller than the 0.6% increase in the corresponding quarter of 1959. It equaled the gain registered during the same quarter of 1958, however.

Electrical workers fared the best with an average gain of 4.0 cents. Painters advanced by an average of 2.4 cents and plasterers followed with 1.9 cents.

The figures are based on the Bureau of Labor Statistics' quarterly survey of seven major building trades in 100 cities.

Taking a longer look at what has happened on the wage front, the government found that the average hourly wage scale of union construction workers has increased 13.8 cents over the last year. The increases for the seven trades surveyed ranged from 10.1 cents an hour for plasterers to 18.7 for electrical workers (see table).

The size of the third quarter pay increases followed the usual pattern. Wage boosts of 10 cents an hour occurred in a fourth of the scale adjustments, of 15 cents in a fifth, and of 12.5 cents in an eighth. Raises of 20 cents or more an hour were granted in a seventh of the revisions, while increases of five cents or less occurred with the same frequency.

	Average Hourly Wage Increases During Year Ended Oct. 1, 1960		*Rate Levels On Oct. 1, 1960*	
Trade	**Per Cent**	**Cents**	**Average**	**Range**
Bricklayers	2.8	11.3	$4.17	$2.85-$4.80
Carpenters	4.0	14.4	3.78	2.33- 4.55
Electrical workers	4.9	18.7	4.04	2.85- 4.65
Painters	4.1	13.7	3.56	1.75- 3.95
Plasterers	2.6	10.1	4.03	2.75- 4.70
Plumbers	3.1	12.1	4.02	3.00- 4.45
Building laborers	4.7	12.6	2.79	1.20- 3.80
ALL TRADES	4.0	13.8	3.66	....

Long Strike Is Settled At Dominion Bridge Co.

Dominion Bridge Co. and 1,350 employees at Dominion's main plant in Montreal have settled a nine-week strike, establishing a pattern that is expected to be followed at 10 other branches, including Toronto.

The company had insisted on separate bargaining at each branch.

The agreement provides for an eight-cent wage increase spread over two years and gives the United Steel Workers Union a major breakthrough in the pension and welfare field.

Dominion will increase its pension contribution 8.5 cents an hour. It also agreed to establish a joint committee to administer the fund.

The wage increase will be in two steps—four cents now and four cents next year. Union members also receive a $10 lump sum payment immediately in lieu of a retroactive pay increase.

Construction by Contract Gets an Offbeat Protest

Union resistance to the use of outside contractors for in-plant work is not necessarily limited to the old, CIO industrial unions.

Earlier last month, more than 200 members of a local of the boilermakers union—one of the building trades—were given five-day suspensions in connection with a work stoppage termed "illegal" by both the union and the Babcock & Wilcox Co., Barberton, Ohio.

The labor dispute, first in two years, revolved around the installation of new equipment to handle the flow of coal. The suspended boilermakers sat down on the job to protest the performance of the work by an outside contractor. They contended the equipment was being erected in violation of a contract provision regulating in-plant construction.

Prevailing Wage Measure Slated for Enforcement

The penalty provisions of the new prevailing wage ordinance in Baltimore will hereafter be applied against offending contractors, the city solicitor warned last week.

Under the ordinance, contractors are liable for a fine of $10 per day per man for each underpayment.

The assurance that the law will be enforced followed a Baltimore Building and Construction Trades Council complaint that the penalty provisions of the law have never been invoked.

A labor union official claimed that 89 violations have occurred.

Court Strengthens Hoffa's Hand

New decision in tangled litigation over monitor system casts further doubt on efficacy of court supervision

James R. Hoffa has won another court skirmish in his battle to throw off all fetters to his leadership of the teamsters union.

This time, the U. S. Court of Appeals in Washington, D. C., sided with the teamsters and blocked the appointment of former FBI agent Terence F. McShane as chairman of the court-appointed, three-man board of monitors, which is riding herd on Mr. Hoffa's provisional stewardship of the union.

Result is that the board of monitors, which has failed to function for months, has again been rendered ineffective. And further doubt has been cast on the practicality of the whole system.

The teamsters had opposed Mr. McShane's appointment primarily on two grounds. He had not been jointly nominated by the union and by the dissident members whose original lawsuit to unseat Mr. Hoffa ended in the consent decree that set up the board. And his participation in earlier investigations of Mr. Hoffa, it was claimed, established him as a Hoffa foe incapable of "neutrality."

In a 2-to-1 decision, the appeals court ruled that the union and the dissidents each had the right to veto the appointment of a monitor chairman if the grounds for doing so were "reasonable." Each group is represented on the board by one monitor.

In Mr. McShane's case, the court said, his previous activities in teamster litigation were a "reasonable basis" for the teamster objections.

The dissenting judge, however, underscored one of the weaknesses of the monitor system by pointing out that the majority ruling automatically destroys the system. Either side can prevent the board from operating, he said, by exercising its veto and keeping the chairmanship perpetually vacant. Under the consent decree, the monitors can act only by majority vote.

The teamsters have asked that Plato E. Papps, who is the general counsel of the International Association of Machinists be appointed chairman.

Another significant aspect of the litigation still before the courts is a teamster request that the union be allowed to call a convention January 16. This would result in the liquidation of the board of monitors and, it is believed, the reelection of Mr. Hoffa with no strings attached. Earlier, the same appeals court suggested "an earnest effort" be made to pave the way for such a convention.

So far, the monitors have accomplished little because of the dissensions, personnel changes and litigation that have occurred. The union, which foots the bill, says the monitors have already cost it "over a million dollars."

Chamber Cites Boycott Dangers

The Chamber of Commerce has renewed its attack on the construction industry's situs picketing bill. It claims the proposed legislation "would leave the missile site program completely vulnerable to even greater delays" than those it has already experienced.

Labor unions, according to the Chamber, averaged one strike every four days at Air Force missile bases in the 12-month period ending last June. It noted that missile base construction now lags three to six months behind schedule. Secondary boycotts and jurisdictional strikes, it charged, account "for much of the lost time."

The Chamber said that "while the Pentagon has been trying to fire up the missile site program, Congressmen and Senators have been promising unions that they will fight in the next session of Congress to legalize secondary boycotts at all construction sites," including all installations for missile bases.

The picketing bill, which has had the support of the Eisenhower Administration, would not legalize all secondary boycotts. It would amend the present law to make it clear that an otherwise lawful strike at a construction site against one of several construction contractors at the site could not be banned as a secondary boycott. Direct result would be nullification of the Supreme Court's decision in the Denver case.

Pointing up the urgency of the missile program, the Chamber said the nation now has only two bases from which it can fire long-range weapons—one at Presque Isle, Me., and the other at Vandenberg Air Force Base.

It conceded, however, that Defense Department reports attribute some of the lag in the missile program to "mistakes by the government and by contractors."

Union May Fine Members Who Cross Picket Lines

The Wisconsin Supreme Court has ruled that labor unions may levy fines against members who cross the union's own picket lines to go to work.

The decision reversed a lower court ruling in two cases involving strikes at Allis-Chalmers Manufacturing Co. and Allen-Bradley Co. of Milwaukee.

In both instances, the state labor board had issued cease and desist orders on the grounds that collection of the fines would constitute an unfair labor practice.

The State Supreme Court declared in a unanimous opinion that only the National Labor Relations Board had jurisdiction in such cases and that the NLRB has ruled that a union is protected in its right to enforce its constitution and by-laws.

Denial of the right to impose the fines, the court reasoned, could weaken the unions and destroy the balance of bargaining power the federal law seeks to preserve.

Bricklayers Local Union Endorses New Techniques

Local 4 of the bricklayers union in Nashville, Tenn., is cooperating fully in the use of new techniques designed to increase productivity and to yield "more uniform results in the laying of brick."

Members of the union have approved:

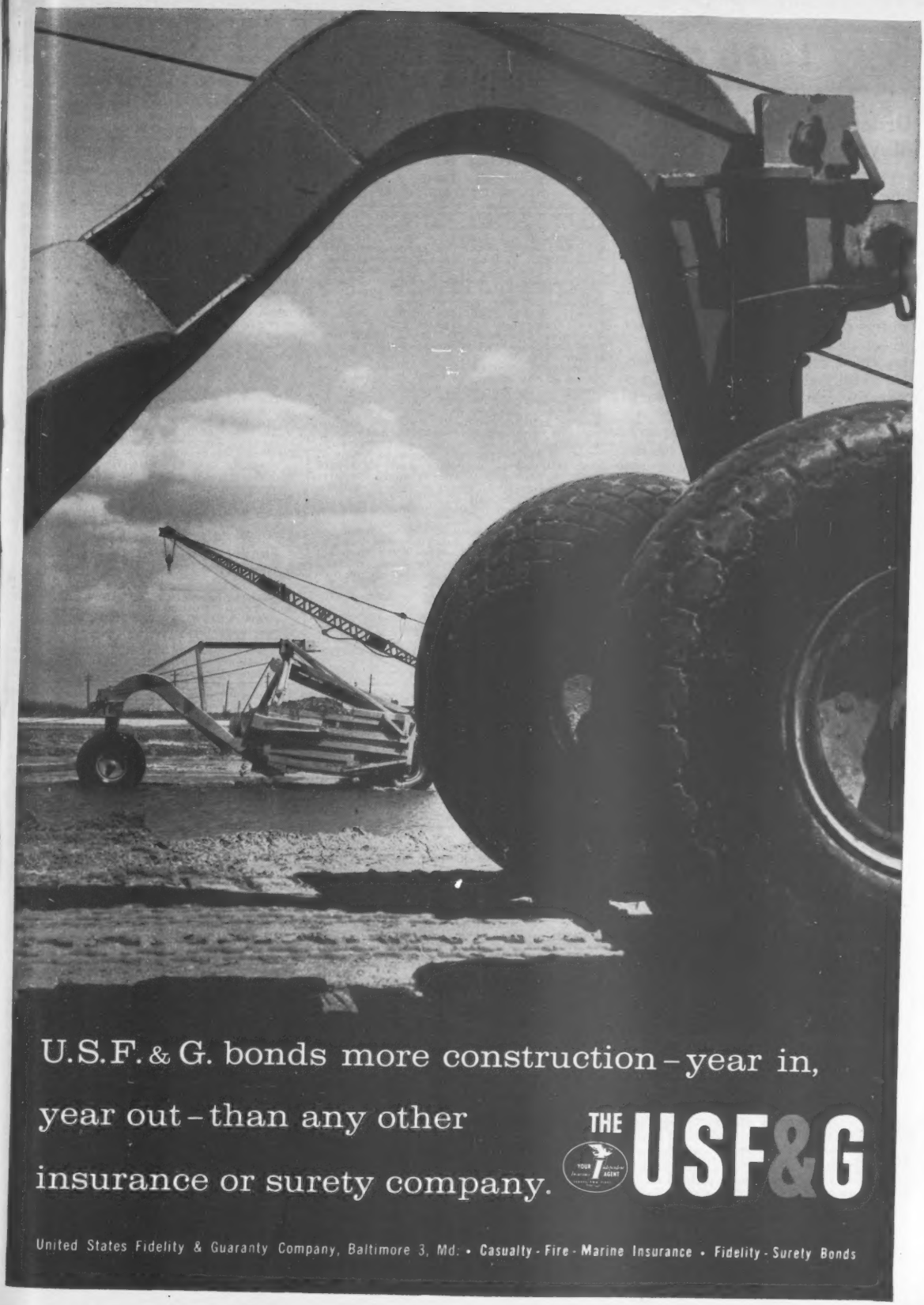
- Use of a marked line to lay out the first course of brick and keep succeeding courses level.
- Use of a corner pole for vertical alignment of the brick to eliminate much of the plumbing and leveling at corners.
- Use of adjustable scaffolding allowing the bricklayer to work at the proper height at all times.

Bridges May Get Toehold On Hawaiian Construction

Harry Bridges' International Longshoremen's and Warehousemen's Union appears to be headed deeper into the construction field in Hawaii.

The union started by accepting construction workers in outlying areas, away from Honolulu where the AFL-CIO is well entrenched. Now, however, it has received a petition for affiliation from the Hawaii State Construction Workers Union, a 700-member splinter group that broke away from the AFL-CIO last year. The main strength of that group is in Honolulu.

This may mark the beginning of a major drive into AFL-CIO territory.


U.S.F. & G. bonds more construction – year in,
year out – than any other
insurance or surety company.
THE USF&G
United States Fidelity & Guaranty Company, Baltimore 3, Md. • Casualty - Fire - Marine Insurance • Fidelity - Surety Bonds

Legal

Orders for Extra Work May Have to Be Written

As a general rule, where the party for whom the work is being done or his agents direct the performance of extra work, the contractor is generally entitled to recover for the extra work, even though no written order for it was given.

The party by his conduct is deemed to have waived the requirement for a written order. However, in some states where the work is being done for a branch of the government, the courts have held that where the contract provides for a written order for extra work, no compensation can be had for the work unless the order is made in writing. This conclusion is based on the theory that the contract limits the rights of the agents of the government to order extra work.

In a Pennsylvania case,[1] the contract for the erection of a public school provided that no extra work or changes should be made unless by a written order from the owner signed or countersigned by the architect or a written order from the architect stating that the authority had authorized the extra work or changes and that no claim for additional compensation should be valid unless so ordered.

The contractor performed alleged extra work without such written order. The contract provided for the arbitration of disputes. The arbitrators made the contractor an award which determination was set aside by the court, and the award limited to the amount that the school authority conceded was due under the contract. The court referred to other Pennsylvania cases where the courts have held that where municipal contracts require written orders for extra work, there can be no compensation for the work in the absence of a written order.

(1) Emporium Area Joint School Authority v. Anundson Construction and Building Supply Company, 156 A. 2d 554, Supreme Court of Pennsylvania, Dec. 17, 1959.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.,: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers; and Legal Cases for Contractors, Architects and Engineers.*

OFFICIAL PROPOSALS

Bids: December 22, 1960

George Washington Bridge Lower Level Expansion New York Approach Section No. 3

THE PORT OF NEW YORK AUTHORITY
CONTRACT GWB-190.009

Pursuant to the provisions of the highway law and special provisions for projects financed with Federal Aid Funds, sealed proposals for the sale of materials and performance of Work for the construction of Section 3 of the approach roadway system in New York City for the lower level expansion of the George Washington Bridge will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Thursday, December 22, 1960, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $50.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $50.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, November 10, 1960

Bids: November 22, 1960

Various Port Authority Facilities 1960-1961—Test Borings

THE PORT OF NEW YORK AUTHORITY
CONTRACT MF-107.698

Sealed proposals for performing test borings at Various Port Authority Facilities during the year 1960-1961 will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y. until 2:30 P.M. on Tuesday, November 22, 1960 at which time said proposals will be opened and read in Room 1108.

Contract Documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, November 10, 1960

Bids: December 22, 1960

Purchase of Hydraulic Dredge

COUNTY OF SUFFOLK, NEW YORK
DEPARTMENT OF PUBLIC WORKS,
YAPHANK AVENUE, YAPHANK,
NEW YORK

Sealed bids, in duplicate will be received until 11:00 A.M. prevailing time, on December 22nd, 1960, in the office of the Suffolk County Department of Public Works on Yaphank Avenue, Yaphank, Suffolk County, New York by the Commissioner of Public Works, at which time the bids will be publicly opened and read for the furnishing of one (1) new, heavy duty, 12-inch hydraulic pipeline dredge.

The Proposal Form, Form of Contract and Bond and the Specifications may be examined at the office of the Suffolk County Department of Public Works and copies thereof may be obtained upon application. The charge for a set of forms and specifications is $15.00 which amount will be refunded if they are returned in good condition within thirty (30) days of the award of contract or the rejection of bids.

Bids will be considered only from qualified firms who are and have been regularly and continuously in the business of designing, constructing, and servicing heavy duty hydraulic pipeline dredges for at least ten years and who have built at least five (5) dredges of the type specified and of comparative or greater size and power within the past 5 year period and which dredges can be proved to be in successful and economical operation.

Bids will be evaluated taking into consideration price; the equipment the bidder proposes to furnish; availability of spare parts; specified time of delivery; the quality of the bidders' design, manufacturing and servicing facilities; the actual dredge building experience of the bidder; the quality of the dredges they have built or have under construction; the field proven efficiency and economy of operation of similar dredges designed and manufactured by the bidder; and the completeness of the bidders' offer and conformity with the Department's specifications and requirements.

Each bidder must deposit with his bid a certified check made payable to the Suffolk County Department of Public Works in an amount of not less than five percentum (5%) of the gross bid in the proposal form.

The Department reserves the right to waive any informalities in or to reject any or all bids.

All bids are to be submitted in a sealed envelope plainly marked on the outside "Bid for Hydraulic Pipe Line Dredge".

H. F. BISHOP
Commissioner of Public Works

Bids: November 28, 1960

Port Newark Repairs to Berth 27 and Fender System at City Channel

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M—590

Sealed proposals for Repairs to Berth 27 and Fender System at City Channel—Port Newark will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M. o'clock November 28, 1960, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administration Services, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of Proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
S. Sloan-Colt
Chairman

New York

Bids: December 1, 1960

New Jersey Turnpike Authority

NEW BRUNSWICK, N. J.
CONTRACT NO. R-85

Proposals are invited for Contract No. R-85 which involves the construction of additions to the water distribution system, construction of the foundation for an elevated water tank, construction of sanitary sewer extension, and other incidental work at Service Area 7S of the New Jersey Turnpike, in Cranbury Township, Middlesex County, New Jersey.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Standard Time, on the morning of December 1, 1960, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours on or after November 9, 1960, at the office of the Authority, and will be furnished upon payment of Ten Dollars ($10.00) for each set, not refundable.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman

November 2, 1960
R-85 A-1

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: November 17, 1960

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and CANAL LAW, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 17 day of NOVEMBER 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, NEWTOWN RONAN, Assistant District Engineer, 353 Broadway, Albany 1, New York						
Greene (Rte. 23 & 145)	T.S. 60-17	Cairo-Windham, Pt. 1, S.H. 5233; Cooksburg-Cairo, Pt. 3, S.H. 8413; South Cairo-Cairo, S.H. 887; Cairo Hamlet, S.H. 954	3.02 (0.62 Acc.)	Traffic Signs	$1,100 Plans $5	$19,000
DISTRICT No. 2, LACY KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Montgomery (Rte. 10)	R.C. 60-181	Canajoharie-Sharon Springs, Pt. 2, S.H. 347	0.92	Asphalt Conc.=0.92 Mi.; Prestressed, Conc. Bridge 2 Spans 116′ Total	$16,000 Plans $5	291,000
Oneida (Rte. 5 & 12)	FAC 60-25 FASH 60-12	City of Utica: North-South Art. Highway (South City Line to Oriskany Street West) Seneca Turnpike-Utica So. City Line Proj. U-UG-752(8), U-752(8)	4.37 (6.54 Acc.)	Asphalt Conc. Type 2A 3 H.G.S. Comp. I-Beam 4 Sps., 222.55′ Total; 4 Sps., 227.0′ Total; 3 Sps., 159.91′ Total; 1 Bridge Comp. I-Beam 2 Sps., 124.56′ Total; 2 RRGS Comp. I-Beam 1 Sp., 96.75′; 3 Sps., 246.84′ Total. Viaduct-Comp. I-Beam 19 Sps., 1260.5′ Total	$550,000 Plans $10	10,145,000
DISTRICT No. 3, EARL E. TOWLSON, District Engineer, 333 E. Washington Street, Syracuse, New York						
Onondaga (Int. Tr. Rtes. 81 & 690)	FIRC 60-178 FIC 60-22 FIC 60-23	Interstate Route 505 (Oswego Boulevard, FAC 54-3) (Syracuse-Mattydale, FASH 54-3) Interstate Route Conn. 570 (State Fair Boulevard, FAC 54-16) (Northwest Arterial Conn. FASH 54-5) Proj. I-81-2(43)84, I-690-3(7)208	10.5	Fencing and Miscellaneous Work	$11,000 Plans $5	197,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee (Rte. 5 & 33)	FATS 60-16	Batavia City: Main Street Arterial Highway, FAC 49-2, FAC 59-15. Proj. U-706(5)	1.54	Traffic Signs and Signals	$2,100 Plans $5	$39,000
Monroe	M 60-12	Bridges E-142, E-179, E-183 and E-184 Over Erie Canal	....	Cleaning & Painting 4 Bridges	$1000 Plans $5	11,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, N. Y.						
Cattaraugus (Rte. 242)	R.C. 60-179	Salamanca-Little Valley, Pt. 2, S.H. 5259; Little Valley-Randolph, Pts. 1 & 2, S.H. 8149	4.26	Asphalt Concrete=4.22 Mi. Misc. Work=0.04 Mi.	$45,000 Plans $5	764,000
Chautauqua (Rte. 17)	R.C. 60-180	Falconer-Kennedy, S.H. 698 Levant-Poland Center S.H. 5053	1.25 (0.37 Acc.)	9″ Cement Conc. Pvt.=1.21 Mi.; Asphalt Conc.=0.37 Mi. Misc. Work=0.04 Mi.	$29,000 Plans $5	534,000
Erie	C 60-2	City of Buffalo: Kensington Expressway Art. Highway Sect. 1—Contract III (East Tupper St. to East Utica Street)	1.91 (2.07 Acc.)	Asphalt Conc. Type 2A=3.94 Mi. Misc. Work=0.04 Mi.	$145,000 Plans $5	2,625,000
DISTRICT No. 6, WM. J. DENNIS, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Allegany	FASS 60-17	Hillcrest Road, C.R. 49 Proj. S-254(1)	0.18	Asphalt Conc.=0.17 Mi.; Misc. Work=0.01 Mi. Comp. I-Beam Bridge 2 Sps. 107′ Total	$7,000 Plans $5	128,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Jefferson (Int. Trg. Rte. 81)	FITS 60-19	Interstate Rte. 505, Sect. 7AB-2, FISH 59-16 (Pierrepont Manor to Adams) Interstate Rte. 505, Sect. 7AB-3, FISH 57-21 (Adams-Adams Center) Proj. I-81-3(19)	7.08 (2.36 Acc.)	Traffic Signs	$1,000 Plans $5	17,000
DISTRICT No. 8, KURT G. RAUER, District Engineer, Pleasant Valley Rd., Poughkeepsie, New York						
Rockland	R.C. 60-183	Pearl River-Nanuet, S.H. 9006	0.46	Asphalt Concrete	$6,000 Plans $5	110,000
Westchester (Rtes. 22 & 35)	R.C. 60-182	Bedford-Goldens Bridge, S.H. 5298A Katonah-Cross River, S.H. 9251	2.25 (0.52 Acc.)	9″ Cem. Conc. Pvt.=1.92 Mi.; Grading=0.33 Mi.; Access=0.25 Mi. Cem. Conc. Pavt. 0.27 Mi. Asph. Conc. Pavt. Bridge, Comp. Plate Gird. 1 Sp., 102.5′	$50,000 Plans $5	930,000
DISTRICT No. 9, JOSEPH C. FREDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rte. 17)	T.S. 60-18	Windsor-Deposit, S.H. 5338; Binghamton-Windsor, Pt. 4, S.H. 5241; Binghamton-Windsor, Pt. 3, S.H. 5148; Windsor Village: Main St., S.H. 1239	6.31 (2.70 Acc.)	Traffic Signs and Delineators	$1,100 Plans $5	19,000
DISTRICT No. 10, AUSTIN M. SARR, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx (Int. Trg. Rte. 87)	FIMDETS 60-1	Interstate Route Conn. 512 Major Deegan Expressway, Cont. 3 (Park Ave. to St. Ann's Avenue) Proj. I-87-1(4)	1.05	Traffic Signs Delineators Traffic Signals	$5,000 Plans $5	85,000
Nassau	LP 60-1 MSP 60-1 WSP 60-2	Loop Parkway Meadowbrook State Parkway Wantagh State Parkway	....	Repairs and Misc. Work at 9 Bridges	$21,000 Plans $5	390,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: November 29, 1960

New Jersey Turnpike Authority

CONTRACT NO. R-86

Proposals are invited for Contract No. R-86 which involves the furnishing and erection of a 100,000-gallon elevated water tank, and incidental work, at Service Area 7S of the New Jersey Turnpike, in Cranbury Township, Middlesex County, New Jersey.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Standard Time, on the morning of November 29, 1960, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours on or after November 9, 1960, at the office of the Authority, and will be furnished upon payment of Ten Dollars ($10.00) for each set, not refundable.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman
November 2, 1960
R-86 A-1

Bids: December 6, 1960

Feeder Road Program

MINISTRY OF PUBLIC WORKS
REPUBLIC OF EL SALVADOR
BIDS: December 6, 1960
NOTICE TO CONTRACTORS

The Ministry of Public Works of the Republic of El Salvador advises that on December 6, 1960 bids will be received for the construction of a major portion of the proposed Feeder Road Program of the country. The Specifications, Plans and Contract Documents will be for sale in El Salvador on October 31, 1960.

All Contractors, interested in taking part in this bidding are requested to obtain the necessary Documents, Plans and Specifications from the Office of the Proveedor Especifico de Obras Publicas, Edificio Morazan a C. P., San Salvador, El Salvador, C. A. All requests must be accompanied by a certified check in the amount of One Hundred Sixty Dollars ($160.00) which will not be returned.

MINISTRY OF PUBLIC WORKS
REPUBLIC OF EL SALVADOR,
C. A.

U. S. Government

Sealed bids for construction of Home Economics Building, Howard University, Washington, D. C., will be received until 2:00 PM, EST, December 8, 1960, in Rm. 7122, GSA Regional Office Building, 7th & D Sts., S.W., Washington, D. C., and then publicly opened in Rm. 7128 at the above address. Public Building Service, Rm. 1308, GSA Bldg., 19th & F Sts., N.W., Washington 25, D. C., Phone EXecutive 3-4900, Ext. 2397, will furnish, upon request, 3 sets of bidding material to General Contractors interested in bidding the complete project. Three additional sets may be obtained by depositing $75.00 per set. One set of drawings and specifications will be supplied to each principal subcontractor, as determined by the Service, upon receipt of deposit in the amount of $75.00. Deposits will be refunded for such sets if returned in good condition within twenty days after bids are opened. Checks or money orders for deposits or furnished as bid guaranty must be made payable to the General Services Administration. One set of drawings and specifications will be furnished to builder's exchanges, chambers of commerce and other similar organizations with the understanding that the set will be retained on their premises and made available for inspection by any interested subcontractor or material firm. Commissioner of Public Buildings, General Services Administration.

OFFICIAL PROPOSALS

Bids: November 28, 1960

Traffic Commission
Pittsfield, Massachusetts
Invitation for Bids

Sealed proposals for Demolition and Construction of Bituminous Concrete Surfaced Municipal Parking Lot, Pittsfield, Massachusetts, will be received in the office of the Commissioner of Public Works, 33 Pearl Street, Pittsfield, Massachusetts, until 7:00 P.M., Monday, November 28, 1960, where they will be publicly opened and read. The work consists of demolition, grading, drainage work, curbing and surfacing, Municipal Parking Lot on Depot Street and Clapp Avenue, Pittsfield, Massachusetts, as shown on the plans.

The minimum wage rates to be paid by a contractor on this work shall be determined by the Massachusetts Department of Labor and Industries. A copy of the schedule is included in the contract documents.

"Plans and Specifications" may be obtained at the office of the Commissioner of Public Works, 33 Pearl Street, Pittsfield, Massachusetts. A deposit of $25.00 in cash or a certified check payable to the City of Pittsfield will be required for each set of plans and "Specifications".

The City of Pittsfield reserves the right to accept or reject any bid if deemed in the best interests of the City so to do.

Hugh R. McKean, Chairman
Traffic Commission

November 7, 1960
ADVERTISE: November 7

U. S. Government

Sealed bids for construction of Federal Office Buildings 10A and 10B, Washington, D. C., will be received until 2:00 PM, EST, December 20, 1960, in Rm. 7122, GSA Regional Office Building, 7th & D Sts., S.W., Washington, D. C., and then publicly opened in Rm. 3019 at the above address. Upon request Public Buildings Service, Rm. 1308, GSA Bldg., 19th & F Sts., N.W., Washington 25, D. C., Phone EXecutive 3-4900, Ext. 2397, will furnish three sets of bidding material to General Contractors interested in bidding the complete project. Three additional sets may be obtained by depositing $150.00 per set. One set of drawings and specifications will be supplied to each principal subcontractor, as determined by the Service, upon receipt of deposit in the amount of $150.00. Deposits will be refunded for such sets if returned in good condition within twenty days after bids are opened. Checks or money orders for deposits or furnished as bid guaranty must be made payable to the General Services Administration. One set of drawings and specifications will be furnished to builder's exchanges, chambers of commerce and other similar organizations with the understanding that the set will be retained on their premises and made available for inspection by any interested subcontractors or material firm. Commissioner of Public Buildings, General Services Administration.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5434) will be received at Lewiston, California, until 2 p.m., Pacific Standard Time, December 20, 1960, for furnishing labor and materials for Lewiston Dam, Trinity River Division, California, Central Valley Project. Location near Lewiston, California in Trinity County. Principal items are 556,000 cu. yds., excavation; 418,000 cu. yds., embankment; 13,000 cu. yds., concrete; and other work. Completion time 700 days. For particulars, address Bureau of Reclamation, P. O. Box 2511, Sacramento, California; P. O. Box 247, Lewiston, California; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

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• POSITIONS VACANT

Engineer (Civil, Mechanical or Geological) P.E. desirable. Excellent opportunity for aggressive engineer to grow with an expanding eastern drilling contractor. Design and sales engineering, municipal and industrial water wells, water and sewage treatment and pumping tests. P-5349, Engineering News-Record.

Director of Specifications Department. Large Midwest consulting firm has immediate opening for capable individual with broad experience in specification writing for all branches of building construction work. Must also possess administrative ability. Send complete resume of educational background and experience, including personal qualifications and small photograph to P-5347, Engineering News-Record.

Chief Estimator—Experienced in all phases of highway construction, capable of assuming full responsibility of bid preparation and administration after award. Home office of large progressive general contractor located in Central Ohio. P-5563, Engineering News-Record.

Assistant Chief Engineer—Must be capable of assuming full charge of the Engineering Department serving a progressive general contractor specializing in highway construction. A demanding position rewarded by an unlimited future. Compensation commensurate with ability and potential. Location, Central Ohio. P-5564, Engineering News-Record.

Graduate Mechanical Engineer for research, development and design with experience on material conveying equipment such as pneumatic and hydraulic systems. Salary open. Address reply with complete resume to Chicago Fire Brick Co., 1467 N. Elston Avenue, Chicago 22, Illinois.

Topo. Draftsman, permanent employment, experienced in land surveys and calculations. Send resume with map samples emphasizing freehand lettering only, to Box 1517, Bluefield, West Virginia.

Concrete Engineer, with several years of experience in concrete and concreting materials, with some experience desirable in the precast concrete industry. Location-New Jersey. P-5488, Engineering News-Record.

(Continued on opposite page)

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BOX NUMBER

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Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

MECHANICAL ENGINEER

Our expansion has made it necessary to add a man to our staff. Central Kansas location. Position requires a degree in mechanical engineering or equivalent in experience. Age 30-40. He will be responsible for tool and die design, for buildings and all farm supplies included in our production schedule. Excellent starting salary and fringe benefits. Our employees know of this advertisement. We guarantee confidential handling of your reply to this advertisement.

P-5522—Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ELECTRICAL ENGINEERS and DESIGNERS

Several openings available for electrical engineers and designers experienced in powerplant (preferably hydro) design. Salary commensurate with experience. Please send complete resume to Personnel Manager.

HARZA ENGINEERING COMPANY
400 West Madison Street Chicago 6, Illinois

PLANT MANAGER

Preferably with experience in structural steel, miscellaneous iron or job shop steel fabrication experience. Union experience essential. Fifty man shop located in Eastern Pennsylvania. Reply stating education, experience and salary desired. All replies kept confidential.

P-5432, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

• POSITIONS VACANT

(Continued from opposite page)

Construction Engineer—Experienced, Competent, Familiar with Design of Falsework, Erection Equipment. Steel Erection Procedures, Structural Steel Detailing, and Job Organization. Wanted by Large Eastern Fabricator and Erector. P-5499, Engineering News-Record.

Have opening for recent Civil Engineer Graduate with military obligations completed who desires to learn the construction business. Must be ambitious, aggressive, dependable, use no intoxicants, willing to start in the field on industrial buildings and heavy construction, and willing to move. Must be single. We operate throughout Kansas and adjacent states; offer excellent opportunity for advancement. Martin K. Eby Construction Company, Inc., P.O. Box 1679, Wichita, Kansas.

Senior Cost Engineer. Must be familiar with the Uniform System of Accounts for Electric Utilities. Duties will consist of analyzing completed major construction projects for an Electric Utility. Experience with the Federal Power Commission or a State Public Service Commission would be desirable. Some experience with the Property Record Department of any Electric Utility would also be an asset. Please send complete information on experience, references, salary requirements, and availability. Indianapolis Power & Light Co., 25 Monument Circle, Indianapolis 6, Indiana, Employment Division.

Estimator—Thoroughly experienced in take-off, pricing, and analyzing bids. Permanent position with medium-sized commercial and industrial building contractor in Connecticut. Please state minimum salary and availability. P-5510, Engineering News-Record.

Office or project engineer—Expediting, purchasing and some estimating experience. Design and field experience helpful. Permanent position with medium-size commercial and industrial contractor in Connecticut. Please state minimum salary and availability. P-5511, Engineering News-Record.

Civil Engineer experienced in office and field work covering heavy construction, road, bridge and dam construction. Give full details as to age, experience, marital status, salary required and reference in first letter. P-5599, Engineering News-Record.

Estimators senior. Civil, architectural and mechanical. Government facilities and buildings. Airports, dams and hydro-electric facilities. International bidding, office in New York. P-5590, Engineering News-Record.

Teaching position; instructor in structures and highway. Two year Technical Institute. Civil Engineer, prefer masters degree or P.E., four years experience. Appointment as Assistant Professor, ten month year, starting December 1, 1960. Write B. K. Sommers, Agricultural and Technical Institute, Delhi, New York.

(Continued on following page)

CONSTRUCTION EXECUTIVES

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Mail complete and confidential resume to:

P-5245, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SALES ENGINEERS SANITARY

Dorr-Oliver's expanding activity in the Sanitary field has created a need for additional sales staff.

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CIVIL ENGINEERS

Civil Engineers with 2 to 15 years of experience in layout and design of dams, intakes, powerplants, spillways, canals, etc., to fill immediate openings in a design office. Some experience in writing reports desirable but not essential. Please send complete resume to Personnel Manager.

HARZA ENGINEERING COMPANY

400 West Madison Street, Chicago 6, Illinois

SPECIFICATION WRITER

Civil or mechanical engineer familiar with industrial construction having ability to write specifications for structural and architectural work from design drawings. Also would write piping, heating, equipment and instrument specifications from operating and design data furnished by staff engineers.

Send complete resume to:

Director of Personnel

The Rust Engineering Company

930 Fort Duquesne Boulevard

Pittsburgh 22, Pennsylvania

• POSITIONS VACANT

(Continued from preceding page)

Estimator Wanted—Plumbing, Heating, Mechanical Piping. Top notch, experienced man. Salary commensurate with experience and ability. Permanent position. Liberal Company benefits. Air conditioned office. Submit full resume of experience to Charles Simkin & Sons, Inc., Att: S. Simkin, P. O. Box 471, Perth Amboy, N. J.

Draftsman—experienced structural steel detailer and checker. Permanent position with established consulting firm. Fringe benefits. Submit resume of experience, references and salary expected. Samborn, Steketee, Otis and Evans, Libbey-Owens-Ford Building, Toledo 2, Ohio.

Draftsmen, Structural-Experienced checkers and detailers of structural steel shop dwgs. Relocation expenses. Fink and Zwecker Co., 1100 Crescent Ave., N.E., Atlanta 9, Ga.

Structural Engineer. Small Consultant Mid-west. Min. 4 years experience. Potential of Associate Capacity. P-5609, Engineering News-Record.

Wanted—Director of Public Works. The City of Fort Pierce, Florida is accepting applications for the position of "Director of Public Works." This is supervisory work in directing the operations of the Public Works Department activities. Work involves responsibility for the organization, direction of activities for streets, drainage, sewer system, parks, garage and garbage and trash disposal. Applicants for this position must have considerable practical experience in municipal work. Age limit 30 to 45 years. Starting salary $7,200 per annum with fringe benefits. Interview arranged on basis of letter stating qualifications, educational background, previous employment and compensation received. Send letter of application to Mr. Edward C. Peterson, Personnel Officer, City of Fort Pierce, Florida.

• SELLING OPPORTUNITY AVAILABLE

West coast reinforcing bar producer looking for top notch eastern sales representative. Must have close connections with leading contractors engaged in foreign projects. RW-5514, Engineering News-Record.

• POSITIONS WANTED

Project Manager—Chief Estimator 17 years experience large building construction. Desires relocation in Central or Southern Florida. PW-5552, Engineering News-Record.

Situation Wanted—Former officer large railroad twenty years track and good construction, maintenance, terminal and line operation, administration and negotiation labor contracts. Not CE. PW-5554, Engineering News-Record.

Civil Eng. age 28 field and office experience desires position with general contractor N. Y. or New England. PW-5568, Engineering News-Record.

Design/Draft./Takeoffs — Engineer desires part time or consider full time N.Y.-N.J. area. PW-5491, Engineering News-Record.

Chief Field Accountant-Experienced large projects—Familiar full field operation, accounting, bookkeeping, cost, payroll, purchasing, expediting, all statements, all types contracts. Prefer foreign work, but will relocate nationally. PW-5483, Engineering News-Record.

General Management—Project Manager— Proven record of successful management and field operation. Registered P.E. with 20 years general construction experience, estimating to final. Want to relocate western U.S. or foreign assignment, in married status. PW-5569, Engineering News-Record.

Project Mgr.—Const. Supt. Flood Control, Bldgs., Roads, Tunnels, excellent Mech. background, available now. 9238 East Parkhill Drive, Washington, DC OL. 26196.

Construction Supt. General Construction. PW-4482, Engineering News-Record.

Construction Supt. 33 years exp. Gen. Const. —industrial, schools etc. Will relocate. PW-5504, Engineering News-Record.

Engineering Executive. Wide industrial, chemical and civil experience; all phases administration and management. Organize and direct large design jobs or work in consulting and exec. asst. capacities. Proposals, reports, contracts, liaison, trouble shooting, P.E. in 5 States. PW-5598, Engineering News-Record.

Sales Engr—BME—fabricated structural and reinf. sales—over 10 yrs with present company—desires opportunity with progressive firm—resume on request. PW-5608, Engineering News-Record.

Master mechanic desires permanent position with heavy construction company. 12 years field and shop experience on all types of machinery. Excellent labor relations and a good pusher. PW-5584, Engineering News-Record.

Construction manager, organize and direct estimating, purchasing, negotiating and site management. Twelve years successful experience on heavy and building construction. Ten years with one company. PW-5596, Engineering News-Record.

• POSITIONS WANTED

Construction executive age 37 qualified manager of equipment maintenance division. Prefer large earthmoving company. PW-5579, Engineering News-Record.

Construction Manager 25 yrs. in heavy commercial and Industrial construction. Detailed knowledge all phases structural, mechanical including estimating, scheduling, office and field supervision, cost control and organizational ability. G. K. Chiles, 211 Del Amigo Rd., Danville, Calif. Vernon 7-5206.

General Manager 22 yrs. all phases hvy. constr. Contract administration & project supervision, estimating, procedures, claims. Major projects U. S. & O. S. PW-5578, Engineering News-Record.

Engineer-Manager. PE, BSCE, MASCE, MNSPE. Age 33. Experience: 7 years responsible field engineering, construction supervision, structural design, and project coordination of heavy industrial and commercial structures. Past year managing own light-construction business. Desires management career opportunity in industry, engineering, or with general contractor. Inquiries acknowledged. PW-5605, Engineering News-Record.

Construction, Project Engineer. Broad experience all phases, design to construction, water supply, sewage treatment, tunnel, bridge, foundation and other heavy construction projects. Know modern construction organization and methods. Handled multi-million dollar projects. Age 59, registered. Available field supervision project construction. PW-5607, Engineering News-Record.

Architect, licensed, 43 seeks position with a busy Arch.-Eng. firm; Highly versatile and energetic. Willing to relocate within New England area. PW-5595, Engineering News-Record.

Engineering Manager. Experienced as administrator in fabricating and construction. Mid-thirties. Registered. Good business background with top technical qualifications. PW-5577, Engineering News-Record.

Executive Accountant Administrator, Degree, 11 years financial, cost, construction, materials accounting, administration, payroll in petroleum, mining, construction, engineering fields, seeks long term overseas employment. PW-5592, Engineering News-Record.

Construction Mgr. or Public Works Director. Grad., regist'd., C.E., 25 yrs. exp. in office and field in bldg. constr. and consltg. engrg., incl. contracting, design, estimates, superv., surveys, airports, new business, archt.-owner-govt. relations. PW-5604, Engineering News-Record.

Structural P.E., BSCE, BS in Bus. Ad., Age 30, 2 years with consultant, bridges & buildings, 3 years with steel fabricator, all phases. Seeks responsible position with future. PW-5597, Engineering News-Record.

Construction Engineer—Project or office, 11 years heavy construction experience on industrial & Locks & Dam projects. Cost range from 3 to 85 million. Experienced in all phases of Construction Engineering including office administrative & organization, claims, sub-contracts, negotiations, estimates & costs, quantity surveys, procurements & engineering. Available in 30 days. PW-5593, Engineering News-Record.

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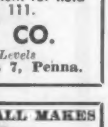

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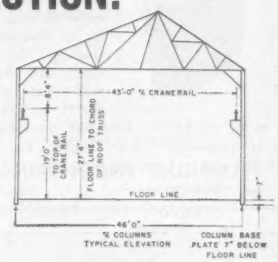

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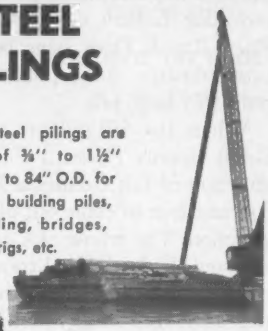

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Up to the Task?

LESSONS TO BE LEARNED from administrative difficulties—including bribery charges—during the construction of Priest Rapids Dam, issue largely from the fact that an extraordinarily small political entity tackled an extraordinarily large job.

When the $91-million contract was signed by the Grant County (Wash.) Public Utility District for construction of this Columbia River dam, it was the largest contract ever to come out of competitive bidding in construction. The whole of Grant County, peopled by 24,346 souls by last official count, had an assessed valuation that was but a fraction of the amount borrowed to build this dam. And since Priest Rapids, the PUD has undertaken Wanapum Dam upstream.

However smart and sincere the majority of the officials involved might have been, they had never tackled anything like this before. There is question as to whether local agencies of such size have the strength to undertake the long struggle involved in building such great dams.

When Priest Rapids and Wanapum dams are done, the PUD principals and others in the county will be understandably proud of their accomplishment. The dams will stand as a tribute to their audacity, as well as to the capabilities of their engineers and constructors. But if the proud owners of these new dams feel they've been through a wringer, that, too, would be understandable.

Once these projects are completed, they will take careful management by Grant County PUD in the operating years ahead if they are to justify the faith of the other utilities—both privately and publicly owned—whose contract commitments made the construction possible. Careful management of hydroelectric plants is expected of private power companies. It is assured by their long experience and by their responsibilities to regulatory bodies. And in the case of large federal agencies such as TVA, the Bureau of Reclamation and the Corps of Engineers, there is not only a long history of experience but also a check on operations by Congress.

The Priest Rapids and Wanapum projects could well be constructed and operated from here on without further untoward incident. To make sure that they are, state and federal legislative bodies might well review the laws regulating such once small but now very large local utilities. It could be that legislative revisions are needed.

No Sewers, No Water

A TROUBLESOME ASPECT of the flight to the suburbs is that city officials must often sit idly by while speculative residential developments, out of reach of their municipal jurisdiction, violate their building and sanitary codes. It is, therefore, encouraging to note that Cleveland has found a way to force the upgrading of these suburban communities, which may be applicable elsewhere.

What Cleveland has done (ENR Sept. 29, p. 28) is substitute the long arm of its water department for the thwarted long arm of the law. The outlying new communities have to depend on Cleveland for their water supply. Cleveland was glad to sell them water, but didn't relish the fact that most of these developments lacked sanitary sewers. There was a danger that wastes would find their way into Lake Erie, the source of the city's water supply. So Cleveland issued an edict: No sewers and sewage treatment, no water.

Developers have had no recourse but to provide the necessary sanitary facilities. And as a corollary they have laid out more compact and better arranged communities, since these require the minimum length of sewer lines.

Any city in a position to follow Cleveland's example would be wise to consider it. Too many substandard residential developments already dot the countryside.

For Better Meetings

MORE VALUABLE MEETINGS serving more members will be held by the American Society of Civil Engineers when it comes around to the idea of greater depth of discussion on fewer subjects at its conventions. This was a proposal of Louis Howson when he was president of ASCE three years ago. And it is a scheme advocated by W. H. Wisely, ASCE's executive secretary.

The idea, as spelled out by Mr. Wisely, is to let the annual meeting of the society in October concern itself solely with professional matters and broad engineering problems with appeal for all civils, no matter what their specialty. Other conventions or conferences during the year would be devoted to papers concentrating on one of three broad categories: water resources, transportation and structures. If further specialization were desirable, even more concentrated conferences would be held—as they have been already on air transport, hydraulics, and computer usage. Indeed, the American Society of Mechanical Engineers goes so far as to schedule for 1961 a summer annual meeting, a winter annual meeting and no less than 19 other conferences—on subjects from aviation to management, metals to power.

Too many ASCE conventions offer the individual member too little in his particular area of interest to warrant the time or expense for attending. The small number of sessions on certain subjects, the quality of the papers, and the poor showing of people to hear them presented all are amply evidenced at convention after convention.

Society members need incentives to attend meetings. Better meetings are the best incentive. A higher concentration of good discussions in well defined fields should improve ASCE's meetings. It's worth a try.